Gateway® 7400 Server System Manual

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Preface

Conventions used in this manual

Throughout this manual, you will see the following conventions:

Convention	Description
ENTER	Keyboard key names are printed in small capitals.
CTRL+ALT+DEL	A plus sign means to press the keys at the same time.
Setup	Commands to be entered, options to select, and messages that appear on your monitor are printed in bold.
User's Guide	Names of publications are printed in italic.
Viewpoint	All references to front, rear, left, or right on the computer are based on the computer being in a normal, upright position, as viewed from the front.

Important



A note labeled important informs you of special circumstances.

Caution



A caution warns you of possible damage to equipment or loss of data.

Warning



A warning indicates the possibility of personal injury.

Getting additional information

Log on to the Technical Support area at www.gatewayatwork.com to find information about your system or other Gateway products. Some types of information you can access are:

- Hardware driver and program updates
- Technical tips
- Service agreement information
- Technical documents and component information
- Frequently asked questions (FAQs)
- Documentation for peripherals or optional components
- Online Technical Support

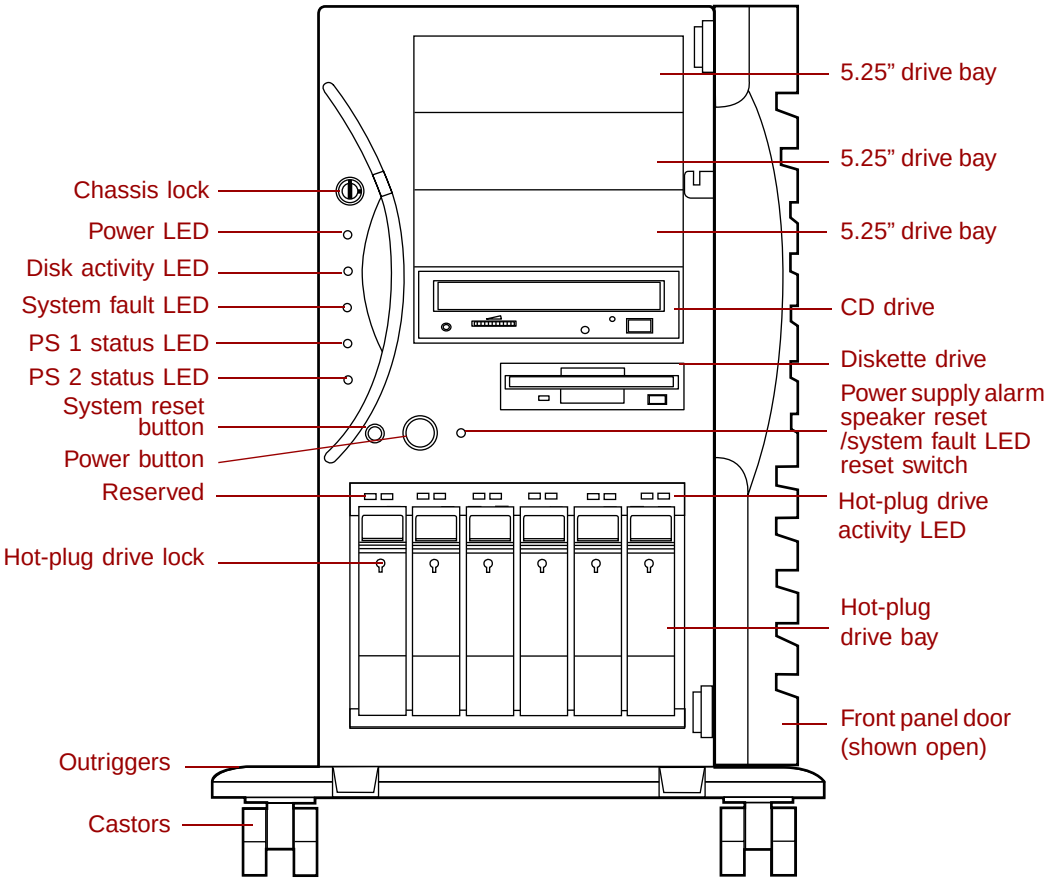
System Features

1

Standard features

- As many as two Pentium® III (FC-PGA Socket 370) processors with 133 MHz Front Side Bus (FSB)
- Four Dual Inline Memory Module (DIMM) sockets, that support up to 2 GB of PC133 Synchronous Dynamic Random Access Memory (SDRAM)
- RCC Champion LE 3.0 North Bridge (CNB30LE) chipset
- Integrated Intel 82559 LAN
- Integrated dual-channel Ultra3/U160 SCSI
- Integrated ATI Rage-XL VGA controller with 4 MB of PC100 SDRAM
- Seven PCI slots (two 64-bit/33 MHz slots and five 32-bit/33 MHz slots)
- One 3.5 inch 1.44 MB diskette drive, one CD drive, and one hard drive
- Integrated Voltage Regulator Modules (VRMs) for both processors
- Keyboard port (PS/2®), mouse port (PS/2), two serial ports, parallel port, two Universal Serial Bus (USB) ports, one RJ-45 LAN connector, and one VGA port

Front panel



Chassis lock prevents unauthorized access to both the front panel controls and to the interior of the system by locking the front bezel to the chassis.

Power LED glows green whenever the system is turned on. The LED also flashes when the system is in sleep mode.

Disk activity LED glows green whenever a drive is actively reading or writing data.

System fault LED (yellow) indicates ECC (Error Checking and Correcting) memory system fault (steady indicates an uncorrectable ECC fault and blinking indicates a correctable ECC fault).

PS 1 status LED glows green when the first power supply module in the redundant power supply is installed and working correctly. It flashes green if the power supply module fails or one of its power levels goes out of bounds. If the power supply module is not installed, this LED is off.

PS 2 status LED glows green when the second power supply module in the redundant power supply is installed and working correctly. It flashes green if the power supply module fails or one of its power levels goes out of bounds. If the power supply module is not installed, this LED is off.

System reset button is a recessed button that lets you reset the server if it becomes nonresponsive.

Power button turns the server on and off. In an ACPI-enabled operating system like Windows 2000, you can set the power button to enter sleep mode rather than turning the system off.

Hot-plug drive lock secures the drive in place to prevent unauthorized or accidental removal.

Outriggers provide support for the castors.

Castors let you roll the server around for ease of service.

5.25-inch drive bays (3) have room for additional 5.25-inch devices such as tape drives or an additional CD drive.

CD drive plays data or audio CDs.

Diskette drive writes to and reads from 3.5-inch, 1.44 MB diskettes.

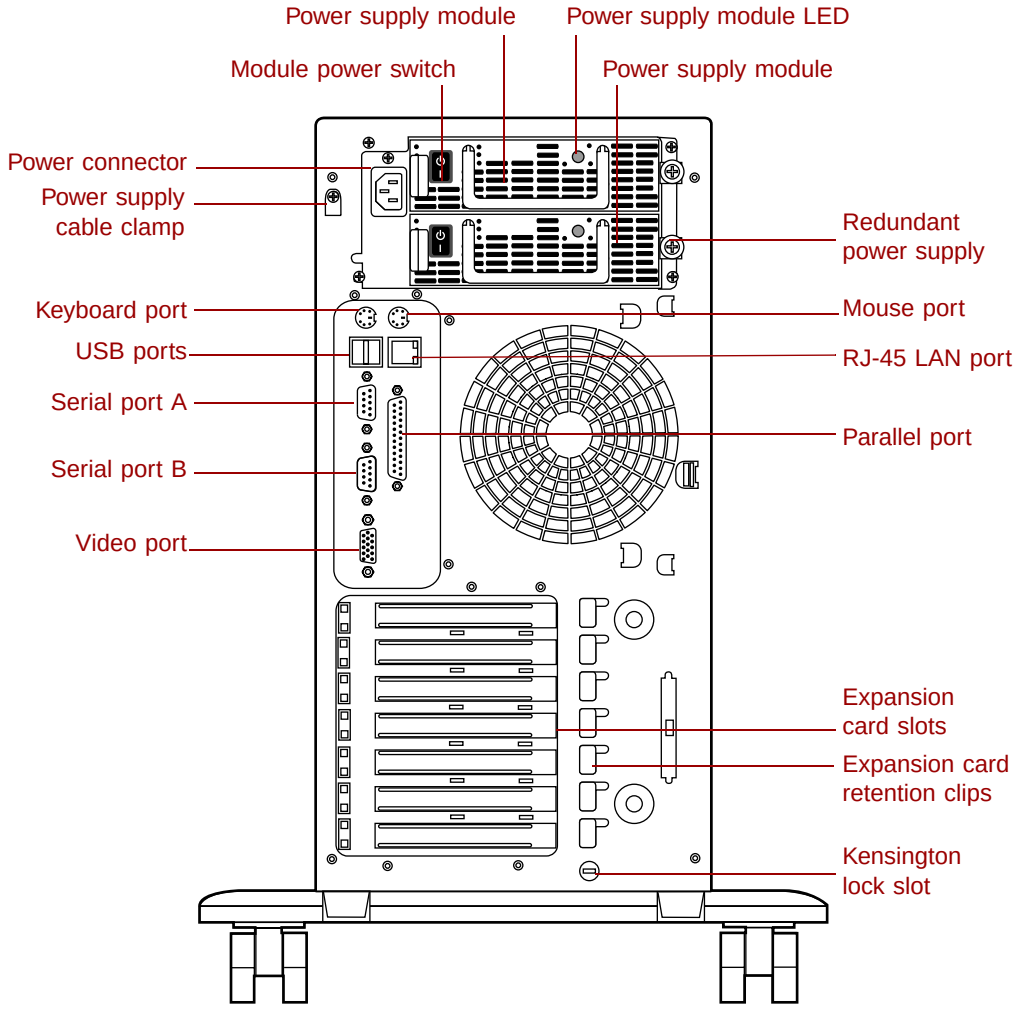
Power supply alarm speaker reset/System fault LED reset switch disables the power supply alarm speaker, if it's sounding, or resets the system fault LED, if it's flashing. Even though the switch resets the speaker, the power supply alarm is not cleared and the appropriate LED continues to flash until the failed power supply module is replaced.

Hot-plug drive activity LED indicates when the hot-plug drive immediately below it is reading or writing data.

Hot-plug drive bay has room for up to six hot-plug drives connected to a hot-plug backplane. Drives have to be set up in appropriate RAID configuration to be hot-pluggable. Removing a drive when it is not properly configured will result in lost data and may corrupt the operating system.

Front panel door covers the front panel controls to prevent unauthorized or accidental access.

Back panel



Power supply modules (2) provide redundant power and hot-plug capability to power the server with minimal downtime.

Module power switches (2) provide independent power control for each redundant power supply module.

Power connector connects to the server power cord. The other end of the power cord plugs into an AC outlet or power strip.

Power supply cable clamp secures the power supply cords so that they are not accidentally pulled from the power supply.

Keyboard port connects to a PS/2-compatible keyboard.

USB ports connect to external Plug-and-Play devices, such as printers, that are automatically configured when they are plugged into the server through one of these ports. USB keyboards and mice are not supported.

Serial ports (2) connect to serial devices.

Video port connects to the monitor interface cable. The video controller is integrated in the system board.

Power supply module LED glows steady green when the power supply module is operating normally.

Redundant power supply provides two hot-pluggable power supply modules that can independently support the power requirements of the server.

Mouse port connects to a PS/2-compatible mouse.

RJ-45 LAN port connects to a network. The adjacent indicator LEDs show LAN activity (yellow) and 100 Mbit speed (green).

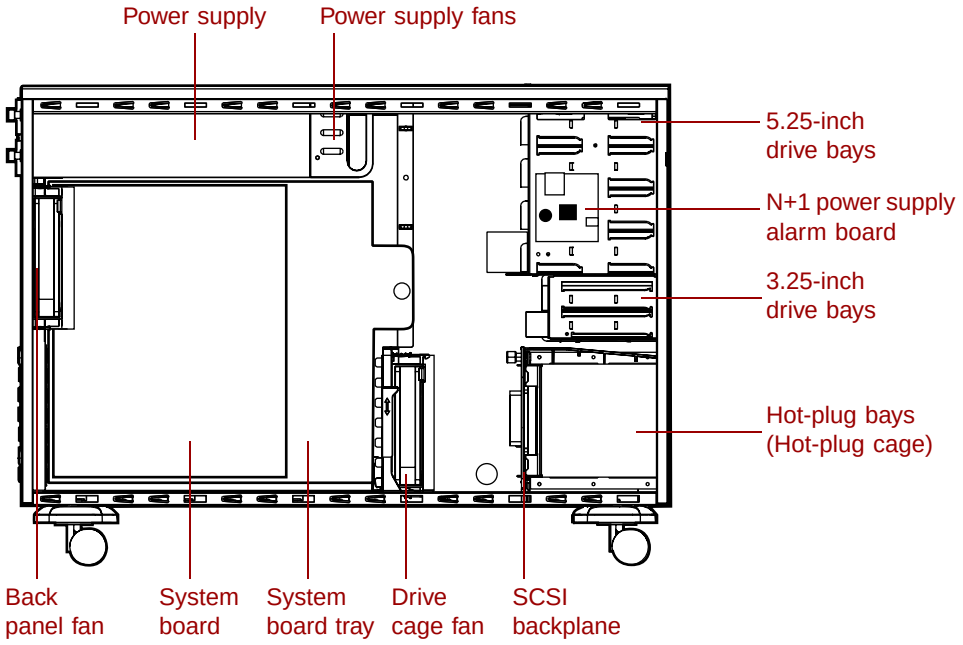
Parallel port connects to a printer or other parallel device.

Expansion card slots (7) have room for as many as seven PCI expansion cards.

Expansion card retention clips (7) allow screwless retention of the expansion cards for ease of maintenance and installation.

Kensington lock slot provides a place to install a security cable and lock.

Interior of system



Power supply provides power to the system components. The redundant power supply provides hot-plug capability and fault tolerance.

Power supply fans provide cooling for the redundant power supply modules.

5.25-inch drive bays provide space for as many as four 5.25-inch drives. A CD drive comes standard with the system and occupies one of the 5.25-inch drive bays.

N+1 power supply alarm board provides an audible alarm if a power supply module fails.

3.25-inch drive bays support as many as two 3.25-inch drives. A diskette drive comes standard with the system and occupies one 3.25-inch drive bay. A hard drive is typically installed in the second drive bay.

Hot-plug bays support as many as six 1-inch high 3.25-inch SCA SCSI hard drives. Drive bays without hard drives contain empty drive carriers to control airflow and EMC emissions.

SCSI backplane provides the control for the hot-plug drives.

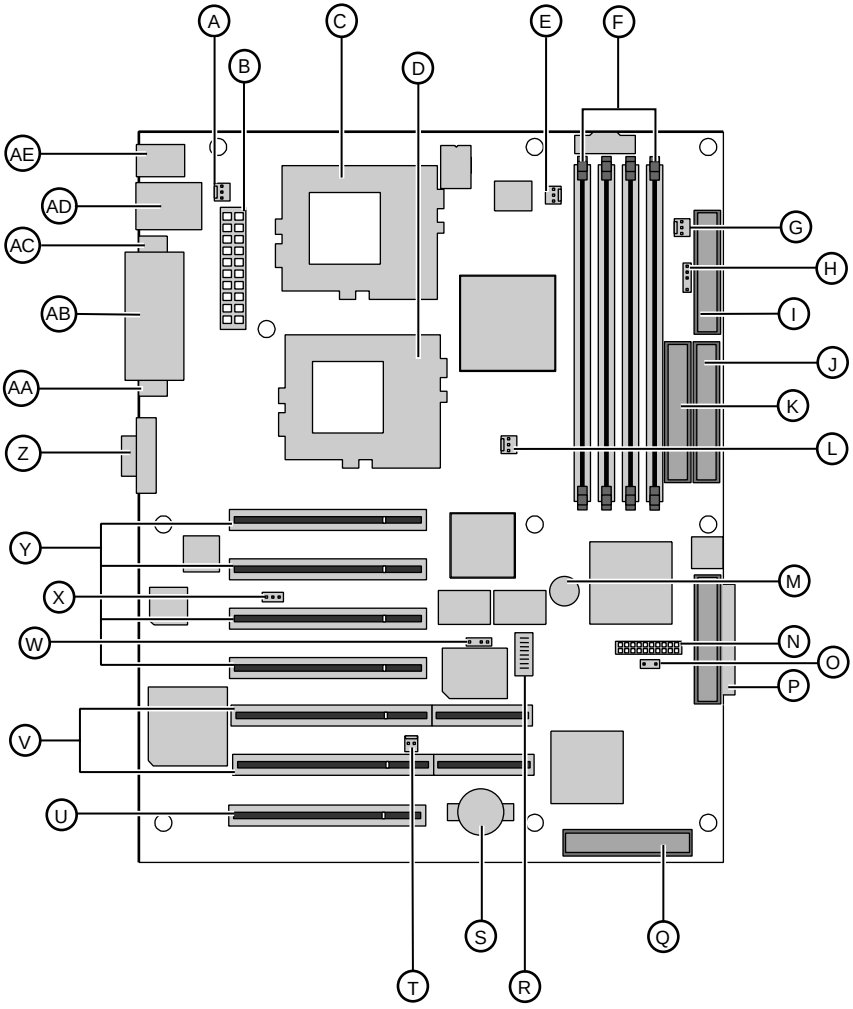
Drive cage fan provides cooling for the hot-plug drives and other internal components.

System board tray supports the system board and makes it easier to remove and install.

System board (See “System board” on page 8.)

Back panel fan provides cooling for system board components and additional cooling for the power supply.

System board



A Rear chassis fan connector

B Main ATX power connector

C CPU 1 socket

D CPU 2 socket

E CPU 1 Fan connector

F DIMM sockets (3 to 0, right to left)

G Front chassis fan connector

H I^2C SMB header

I Floppy drive connector

J Primary IDE connector

K Secondary IDE connector

L CPU 2 fan connector

M Speaker

N Front panel connector

O Auxiliary HDD activity LED connector

P U160 LVD SCSI Channel A connector

Q U160 LVD SCSI Channel B connector

R Configuration switch

S Battery

T (not used)

U PCI 32-bit/33 MHz slot

V PCI 64-bit/33 MHz slots (2)

W (not used)

X (not used)

Y PCI 32-bit/33 MHz slots (4)

Z Video port

AA Serial port B

AB Parallel port

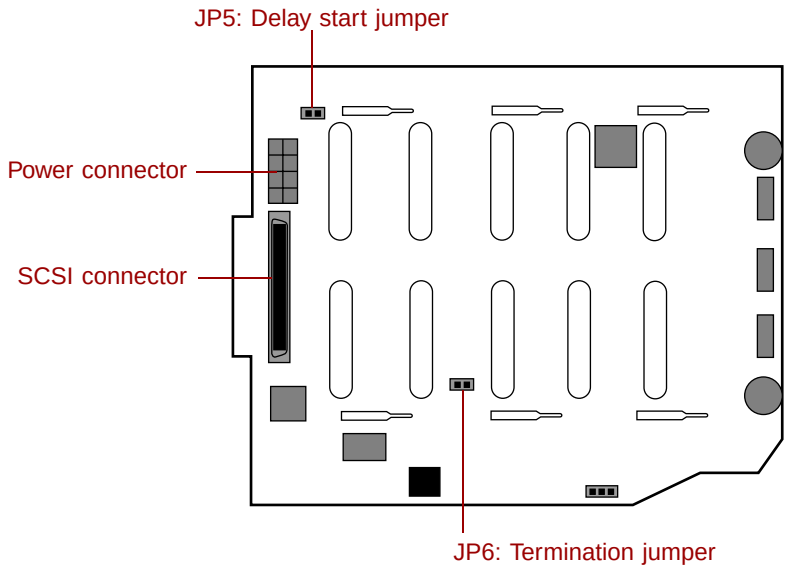
AC Serial port A

AD RJ-45 Ethernet and USB ports 1 and 2

AE PS/2 Keyboard and mouse ports

SCSI backplane board

Back side



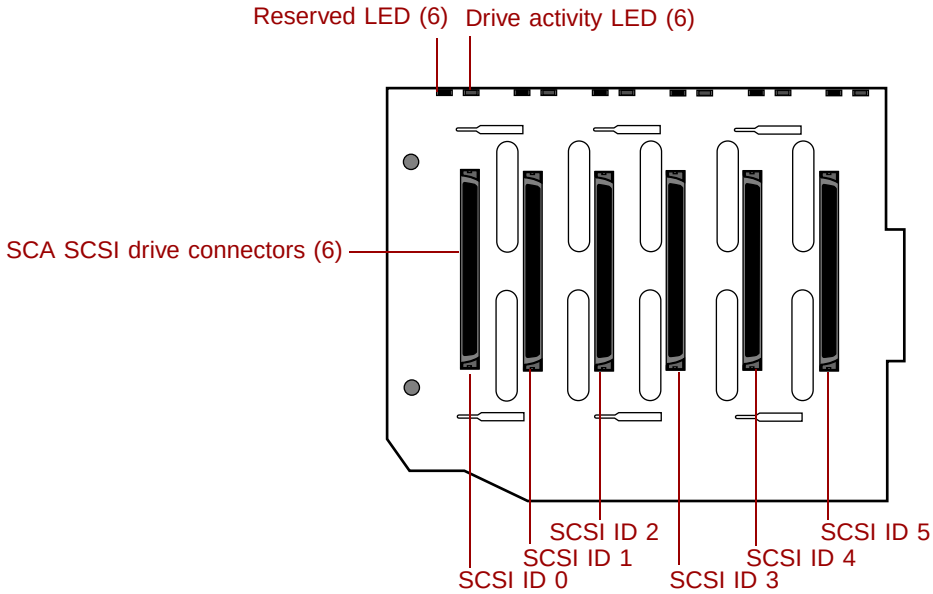
JP5: Delay start jumper controls the spin-up sequence of the drives attached to the backplane. If you leave the delay start jumper on (enabled - default), the drives spin up one at a time in order of their SCSI ID. If you remove the delay start jumper, all drives spin up simultaneously, which may cause an excessive drain on the system power supply.

JP6: Termination jumper - The backplane is designed to occupy one end of the bus and is terminated (jumper off - default).

SCSI connector provides the point of connection for the SCSI cable from the hot-plug controller.

Power connector provides the point of connection for the power cable from the power supply.

Front side



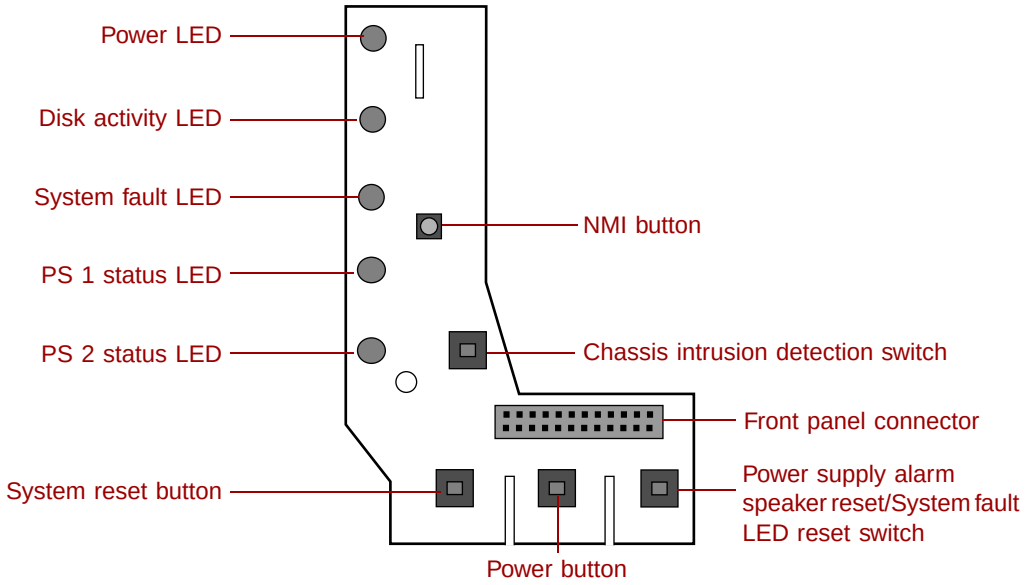
Reserved LED (6) reserved for future use.

Drive activity LED (6) flashes green when the drive is actively reading or writing data.

SCA SCSI drive connectors (6) provide points of connection for six SCA SCSI drives.

Front panel board

The front panel board supports the LEDs and buttons accessible from the front panel. The buttons and LEDs on the front panel board are shown and described below.



Power LED glows green whenever the system is turned on. The LED also flashes when the system is in sleep mode.

Disk activity LED glows green whenever a hard drive is actively reading or writing data.

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System reset button lets you reset the server if it has become nonresponsive.

Power button turns the server on and off. In an ACPI-enabled operating system like Windows 2000, you can set the power button to enter sleep mode rather than turning the system off.

Power supply alarm speaker reset/System fault LED reset switch disables the power supply alarm speaker or resets the system fault LED. The alarm is not cleared and the appropriate LED continues to glow until the failed power supply module is replaced.

NMI (Non-Maskable Interrupt) button allows a technician to help debug server errors.

Chassis intrusion detection switch sends a message to the system management hardware, logging an event when the front bezel is removed.

Front panel connector connects the controls on the front panel with the system board.

2 System Setup

Setting up the server

Use the instructions on the quick guide poster that came with the server to assemble the server.

You can prepare a safer working environment before assembling the server by following these guidelines:

- Use a clean, flat, and stable surface for the server. Allow at least 12 inches at the rear of the server for cabling and air circulation.
- Obtain an adequately rated uninterruptible power supply (UPS). A UPS protects against AC line spikes, power interruptions, and other power fluctuations that may damage the server.
- Protect the server from extreme temperature and humidity. Do not expose it to direct sunlight, heater ducts, or other heat-generating objects.
- Keep the server away from equipment that generates magnetic fields, such as unshielded stereo speakers. Even a telephone placed too close to the server may cause interference.
- Plug the server into a wall outlet, power strip, or uninterruptible power supply (UPS). Make sure the power cords are secured in the power supply cable clamp on the back panel.

Important



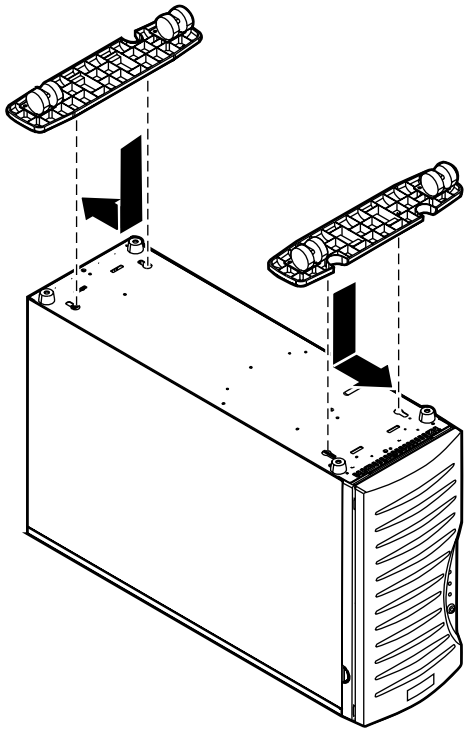
Keep the boxes and packing material. If you need to send the server to Gateway for repairs, you must use the original packaging or your warranty may be voided.

Installing the outriggers and castors

The tower chassis is shipped with small rubber feet to prevent it from slipping and to minimize vibrations when the chassis is placed on a desktop. However, if you intend to place the chassis on the floor, you may find it easier to maintain the system if you install the castors (included), which let you roll the server out for easier access.

To install the outriggers and castors:

1. Gently turn the chassis upside down, resting it on the top panel.
2. Align the outriggers and castors with the slots on the bottom panel of the chassis.



3. Place the tabs on the outriggers into the corresponding slots on the bottom panel and slide the outriggers toward the ends of the chassis.
4. Carefully return the chassis to the upright position.

Starting the server

Before you start the server for the first time, make sure that:

- The redundant power supply is autosensing. It automatically determines the voltage of the incoming power source and compensates accordingly.
- All cables are firmly connected to the proper ports on the back panel of the server.

Caution



Electricity can flow from connected peripherals into the system causing a shock. Make sure your server and peripherals are turned off and unplugged from the power outlet when you connect peripherals to the server.

- Both power supply modules in the redundant power supply are turned on.
- The server and monitor are plugged into an AC outlet, power strip, or UPS (uninterruptable power supply) and that the power strip or UPS is turned on.

To start the system:

1. If you have connected the system components to a power strip or UPS, make sure all the system components are turned off, then turn on the power strip or UPS.
2. Turn on the monitor.
3. Turn on the server. Make sure that the individual power buttons on the power supply modules are turned on. The light-emitting diodes (LEDs) on the front panel and on each power supply module are lit when the power is on.
4. Turn on any other components connected to the server, such as speakers, a printer, or a scanner. If nothing happens when you turn on the system:
 - Make sure that the power cables are securely plugged in and that the power strip or UPS is plugged in and turned on.
 - Make sure that the monitor is connected to the server, plugged into the power strip, AC outlet, or UPS, and turned on. You may also need to adjust the brightness and contrast controls on the monitor.

Understanding the Power-On Self-Test

When you turn on your server, the power-on self-test (POST) routine checks the system memory and components. To see this information on the screen, press TAB during POST.

The system displays an error message if POST finds any problems. Write down any error messages that you see. If you continue to have problems, these error messages may help Technical Support diagnose the cause.

Setting up the operating system

The first time you start your server, the operating system takes a few minutes to set up. Refer to your operating system documentation for specific questions regarding the operating system.

Important



For other operating systems, such as Windows® 2000 or Novell® Netware, refer to the appropriate operating system software manual for setup instructions.

To complete the operating system setup for Windows NT:

1. After the server starts, the start-up wizard opens. Continue by clicking **Next**.
2. Type the requested information in the appropriate text boxes. When you have finished typing the information, continue by clicking **Next**.
3. Continue following the instructions and selecting options in the start-up wizard dialog boxes, clicking **Next** to move through the dialog boxes, until the wizard tells you to restart your server.

 If you need to return to the previous dialog box to change any of your entries, click **Back**.
4. Restart the server. The setup is complete.

Turning off the server

Every time you turn off the server, shut down the operating system first. You may lose data if you do not follow the proper procedure.

Important



For other operating systems, such as Windows 2000 or Novell Netware, refer to the appropriate operating system software manual for instructions.

To turn off the server in Windows NT:

1. Click **Start**, then select **Shut down the computer?**, then **Shut Down**.
2. Click **OK**. The operating system shuts down. If you see a message saying **It is now safe to turn off your computer**, turn off the server by pressing the power button.
3. Turn off the monitor and peripherals.

Warning



When you turn off the server by pressing the power button, some electric current still flows through it. Before opening the server case or connecting or removing any peripherals, turn off the server, then unplug the power cord and modem cord (if installed) or you may get an electric shock.

Resetting the server

If your server does not respond to keyboard or mouse input, you may have to close programs that are not responding. If closing unresponsive programs does not restore your server to normal operation, you may have to reset the system.

Important



For other operating systems, such as Windows 2000 or Novell Netware, refer to the appropriate operating system software manual for instructions.

To close unresponsive programs and reset the server in Windows NT:

1. Press CTRL+ALT+DEL. A window opens that lets you close a program that is not responding.
2. Click **Task Manager**, then select the program that is not responding.
3. Close the program by clicking **End Task**.
4. If the server does not respond, press the reset button to restart the server.

 As a part of the regular startup process, a program to check the disk status runs automatically. When the checks are finished, Windows starts.

3

Case Access

The Gateway 7400 Server is designed as a toolless chassis. None of the normal user-serviceable parts require a tool of any kind to remove, install, or replace. In some cases where the pieces fit very tightly, a tool may make the job easier.

The various clips, tabs, thumbscrews, and other devices that allow toolless construction are color-coded in green for easy identification.

Preventing static electricity discharge

Before opening the server case, follow these precautions to prevent damage from static electricity. When opening your server case, always perform the following procedure.

Caution



Static electricity can permanently damage electronic components in your server. Prevent electrostatic damage to your server by following static electricity precautions every time you open your server case.

To prevent static electricity discharge:

1. Turn off the server power.
2. Touch a bare metal surface on the back of the server.
3. Unplug all power cords from AC outlets and disconnect the modem cord (if installed).

Also follow these static electricity precautions:

- Avoid static-causing surfaces such as plastic and packing foam in your work area.
- Remove the parts from their antistatic bags or containers only when you are ready to use them. Do not lay parts on the outside of an antistatic bag or container because only the inside provides antistatic protection.
- Always hold cards by their edges and their metal mounting brackets. Avoid touching components on the cards and the edge connectors that connect to expansion slots. Never slide cards or other parts over any surface.

Opening the case

Important



All references to front, back, left, or right on the server are based on the server being in a normal, upright position, as viewed from the front.

The only components that are accessible from outside of the chassis are the front panel indicator lights. To access any of the removable media drives, the hot-plug drives, or the power and reset switches you must open the bezel door. To work on the internal components of the server, you must open the chassis, which has two removable parts:

- A bezel that covers the front of the chassis
- A side cover panel that permits access to the interior of the case

Because the components inside the server are extremely sensitive to static electricity, make sure to follow the precautions at the beginning of this chapter for avoiding static electricity damage.

Only qualified personnel should open the system for maintenance. If you are qualified to maintain the system yourself, make sure you are properly grounded before opening the system chassis.

Warning



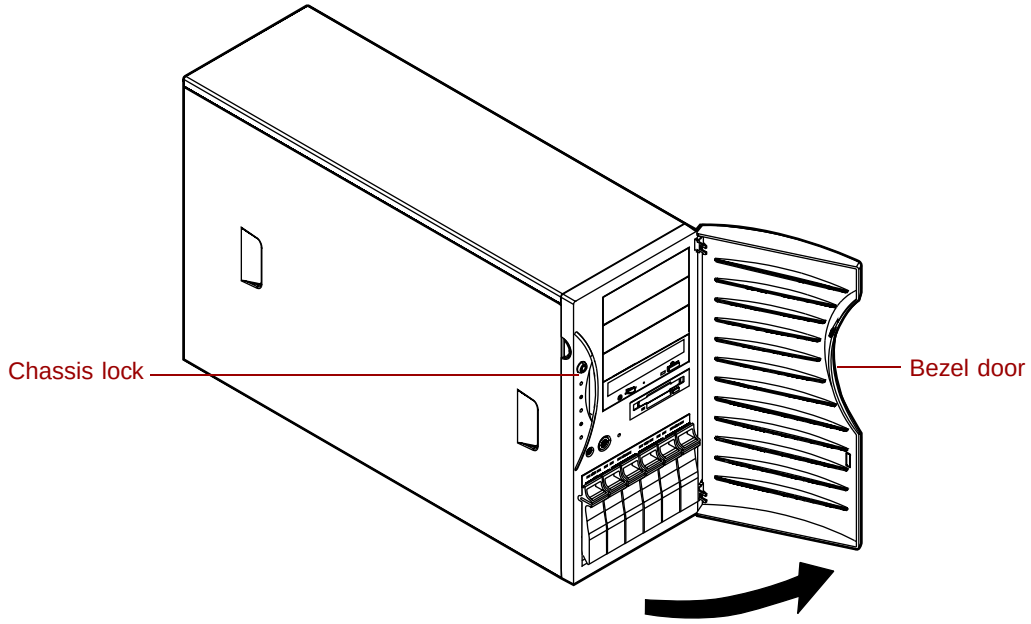
Avoid exposure to dangerous electrical voltages and moving parts by turning off your server and unplugging the power cord and modem cord (if installed) before removing the side cover panel.

Opening the bezel door

The bezel door covers the removable media drives, the hot-plug drives, and the front panel controls. To access these components, you must open the bezel door.

To open the bezel door:

1. If the bezel door is locked, unlock it.
2. Grip the bezel door handle beside the front panel indicator lights, then pull the door open.

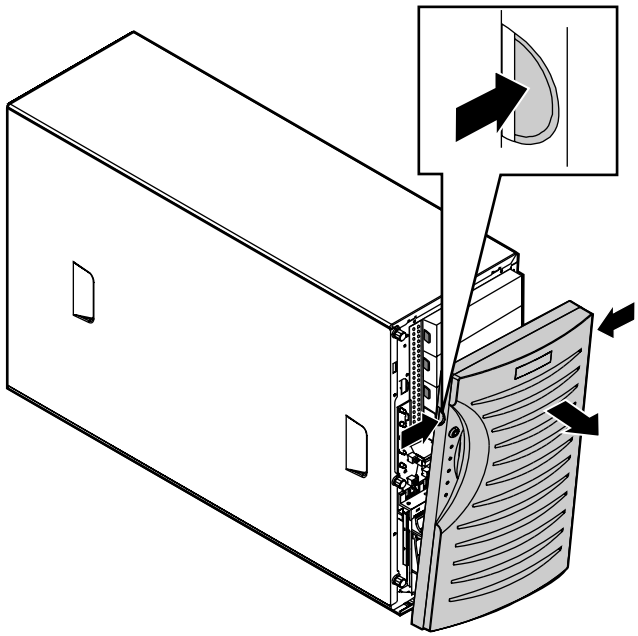


Removing the bezel

The locking bezel provides secure access to the system components. You must unlock and remove the bezel before you can remove the side cover panel and access the interior of the system.

To remove the bezel:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Unlock the bezel, if it is not already unlocked.
4. Press the tabs at the sides of the bezel and pull the top of the bezel away from the server.



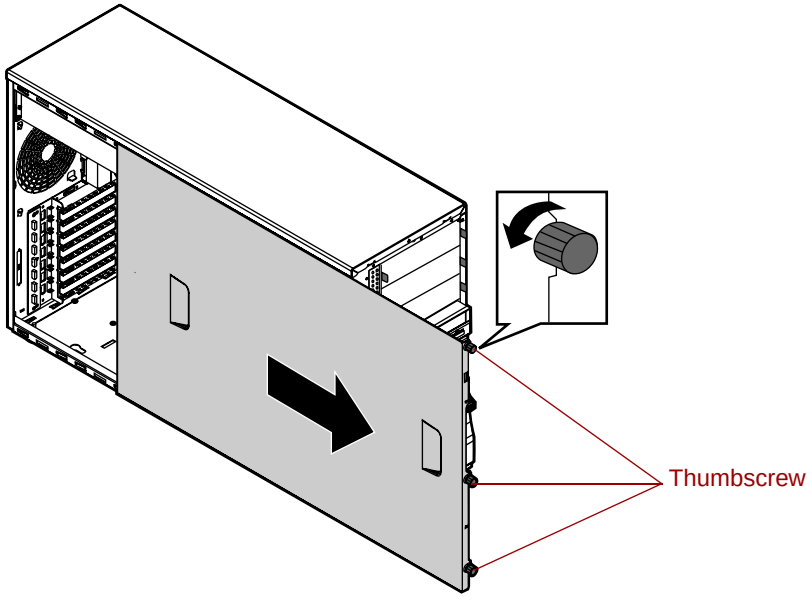
5. Lift the bezel away from the chassis.

Removing the side cover panel

The side cover panel cannot be removed unless the front bezel has already been removed. The side panel provides access to all of the internal components of the server.

To remove the side cover panel:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Loosen the three thumbscrews from the left side of the front panel.



5. Slide the side panel to the front, disengaging the retaining tabs on the top edge of the panel from the top of the chassis.
6. Lift the panel out and away from the chassis.

Closing the case

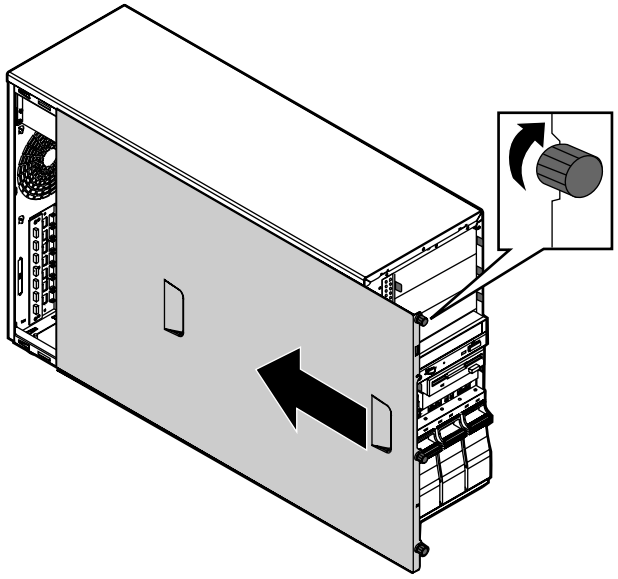
Close the chassis as soon as you finish installing or removing components so that dust and dirt do not collect inside the server.

Replacing the side panel

Closing the side panel covers the internal components. You must close the side panel and replace the front bezel before you can operate the server. If you do not, a system intrusion event is logged by the system management hardware. Be careful not to pinch any cables with the panel as you replace it.

To replace the side panel:

1. Hold the side panel 3/4-inches forward of the chassis. Engage the retaining tabs on the bottom edge of the panel with the slots at the bottom edge of the chassis.
2. Swing the top of the panel toward the chassis, engaging the retaining tabs on the top edge of the side panel with the slots on the chassis.
3. Slide the panel toward the back of the chassis 3/4-inch, securing it in place, then tighten the thumbscrews.

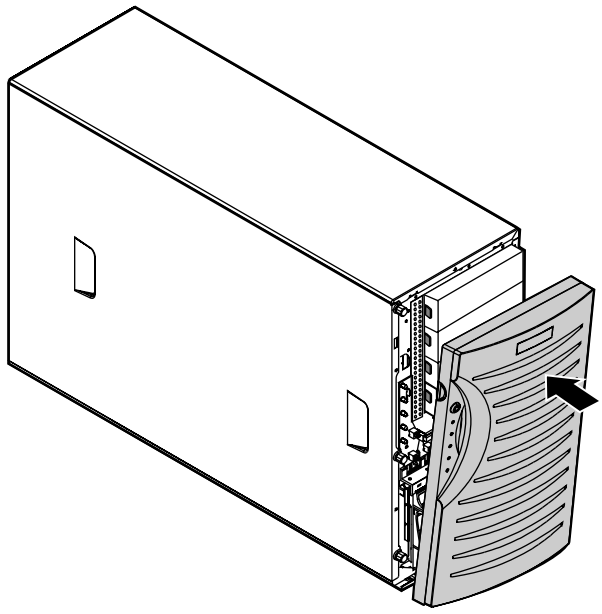


Replacing the bezel

Once the side panel is in place, you must replace the bezel to operate the server. If the server is run without the bezel installed, a chassis intrusion event is logged by the system management hardware.

To replace the bezel:

1. Holding the bezel at an angle to the front of the chassis, place the hinge slot on the bottom of the bezel over the flange on the bottom edge of the chassis.
2. Swing the top of the bezel toward the chassis until the retaining tabs snap into place.



3. Lock the bezel, if necessary.

Replacing and Adding System Components

4

The Gateway 7400 Server is designed as a toolless chassis. None of the normal user-serviceable parts require a tool of any kind to remove, install, or replace. In some cases where the pieces fit very tightly, a tool may make the job easier.

The various clips, tabs, thumbscrews, and other devices that allow toolless construction are color-coded in green for easy identification.

Drives

You can install several types of drives and similar devices in the server. All drives are easy to install and require no tools to replace, unless you are installing a 3.5-inch drive in a 5.25-inch drive bay.

Preparing to replace or add a drive

One 3.5-inch diskette drive, one 3.5-inch hot-plug hard drive, and one CD drive are included with the server. You can add drives of the following types:

- 1-inch high, 3.5-inch hot-plug drives.
- Half-height 3.5-inch hard drives - The system board has two IDE connectors that support as many as two drives each. IDE drives include the IDE CD drive.
- Half-height 5.25-inch devices.

As you prepare to install drives, keep the following in mind:

- If you remove a drive, place it in an antistatic bag or container.
- Before you install a drive, see the drive's documentation for information on configuring the drive, setting any jumpers on the drive, and attaching cables to the drive.
- If you are installing a drive that uses an add-in controller card, install it before you install the drive.
- IDE hard drives can be configured as single, master, or slave. IDE CD drives can be configured as master or slave. Configure the drives by using the drive-select jumpers located on the drives.
- If only one drive is attached to a controller cable, configure the drive as single if it is a hard drive or master if it is a CD-ROM drive. If two drives of any type are attached to the cable, configure one as master and one as slave.
- You may need to configure the drives you install using the BIOS Setup utility. Select F1 at start up to open the BIOS Setup utility.

Drive cabling information

Your system includes three different types of drive cables and possibly one additional cable, if required for the options ordered. Each drive cable is clearly labeled, indicating the cable type and showing which end to connect to the appropriate connector on the system board and which end to connect to the drive.

- Use the diskette drive connector cable to connect the diskette drive.
- Use the standard IDE connector cable to connect IDE devices such as CD drives and standard IDE hard drives.
- Use the SCSI LVD cable (2 connectors) to connect the hot-plug backplane to the integrated SCSI controller on the system board or to an add-on SCSI controller card.
- Use the SCSI LVD cable (5 connectors with built-in terminator) to connect optional SCSI devices to the integrated SCSI controller on the system board or to an add-on SCSI controller card. (This cable is optional.)

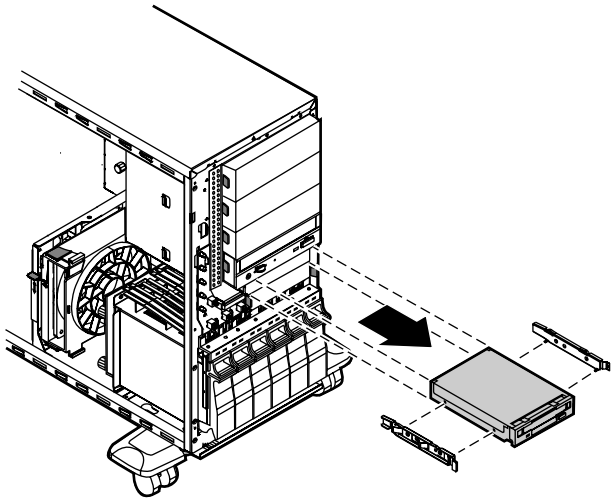
Replacing the diskette drive

The diskette drive is near the bottom of the stack of drive bays.

To replace the diskette drive:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See “Preventing static electricity discharge” on page 22.)
3. Remove the bezel. (See “Removing the bezel” on page 25.)
4. Remove the left side cover panel. (See “Removing the side cover panel” on page 26.)
5. Locate the 3.5-inch diskette drive.
6. Remove the power and data cables from the back of the drive, noting their locations and orientations. (You will reconnect these cables after you install the new drive.)

7 Disengage the rail locking tabs by pressing in on both front rail extensions, then move the drive slightly out of the bay by pushing on the back of the drive. Pull the drive out of the chassis.



8 Remove the rails on both sides of the drive and snap them onto the new drive in the same positions. Make sure the front rail extensions are towards the front of the drive.

Important

The rails on the 3.5-inch diskette drive are different from those on the hard drive and the CD drive. Make sure you install the correct rails on each drive.

9 Set the drive jumpers to the appropriate settings (refer to your drive documentation for jumper settings.)

10 Align the rails with the diskette drive bay, then slide the drive into the bay until the locking tabs snap into place.

11 Connect the power and data cables, making sure the cables are in their original positions.

12 Replace the bezel. (See “Replacing the bezel” on page 28.)

13 Close the case. (See “Closing the case” on page 27.)

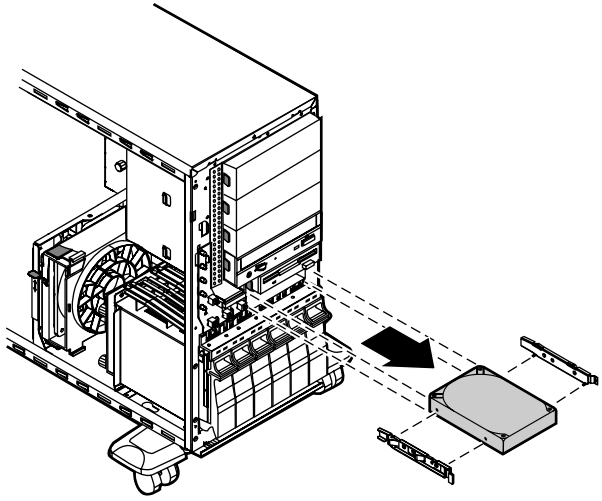
14 Reconnect the power cord, the modem cord, and all other external peripheral devices, then turn on the system.

Replacing an optional drive

An optional hard drive can be shipped with the server. This drive is mounted at the bottom of the drive stack accessible from the front of the chassis, behind the bezel.

To replace an optional drive:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Locate the 3.5-inch hard drive at the bottom of the drive stack.
6. Remove the power and data cables from the hard drive, noting their locations and orientations (you will reconnect these cables after you install the new drive).
7. Grip the mounting rails firmly with thumb and index finger and pull the drive carefully straight out of the drive stack.



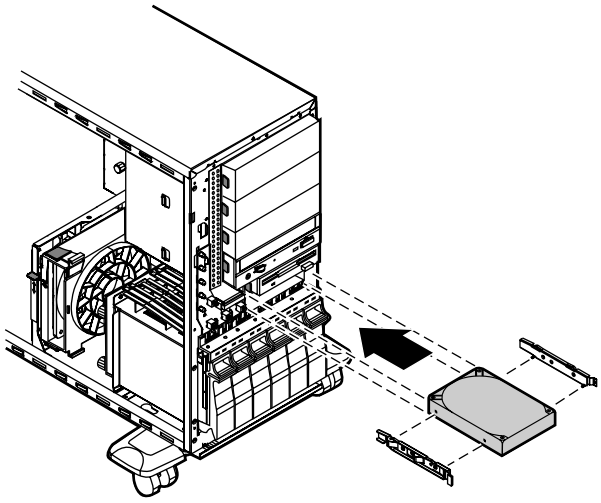
8 Remove the mounting rails from the hard drive.

9 Place the old drive in an antistatic bag or container, then place the new hard drive on a static-free surface with the top up and the connectors facing you.

10 Install the two drive mounting rails on the new hard drive, making sure the front rail extensions are to the front of the device. The rails are labeled.

11 Set the drive jumpers to the appropriate settings (refer to your drive documentation for jumper settings.)

12 Align the rails with the open bay at the bottom of the drive stack, then slide the drive into the stack until the locking tabs snap into place (make sure that the data and power connectors on the drive face the inside of the server).



13 Connect the power and data cables to the drive. (See the drive documentation for proper cable orientation.)

14 Replace the bezel. (See “Replacing the bezel” on page 28.)

15 Close the case. (See “Closing the case” on page 27.)

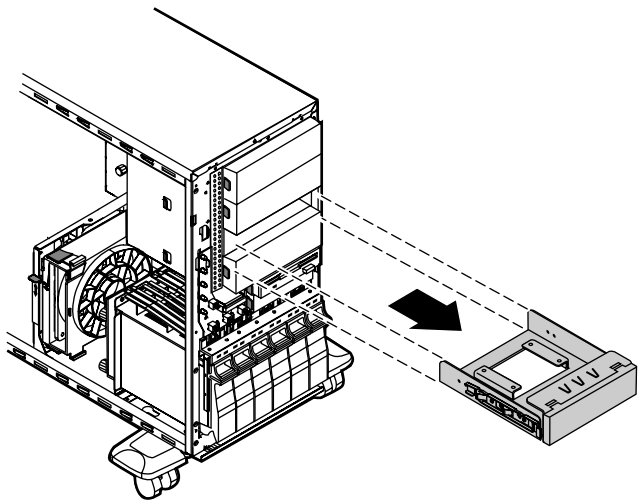
16 Reconnect the power cord, the modem cord, and all other external peripheral devices, then turn on the system.

Installing a 3.5-inch drive in a 5.25-inch drive bay

Additional 3.5-inch hard drives can also be installed in the server in the empty 5.25-inch drive bays. A 5.25-inch filler tray, three of which came installed in your server, is required for this type if installation.

To install a 3.5-inch drive in a 5.25-inch drive bay:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Locate an available 5.25-inch drive bay.
6. Grip the mounting rails firmly with thumb and index finger and pull the filler tray carefully straight out of the drive bay.

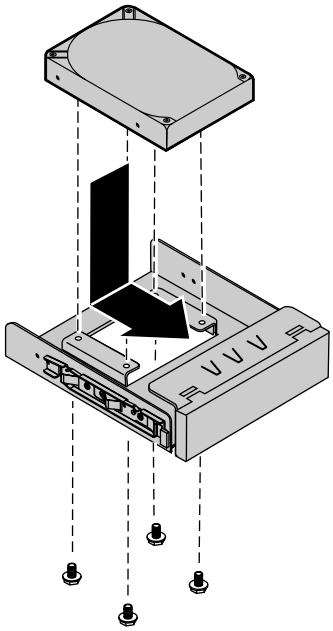


7. Leave the mounting rails on the filler tray.

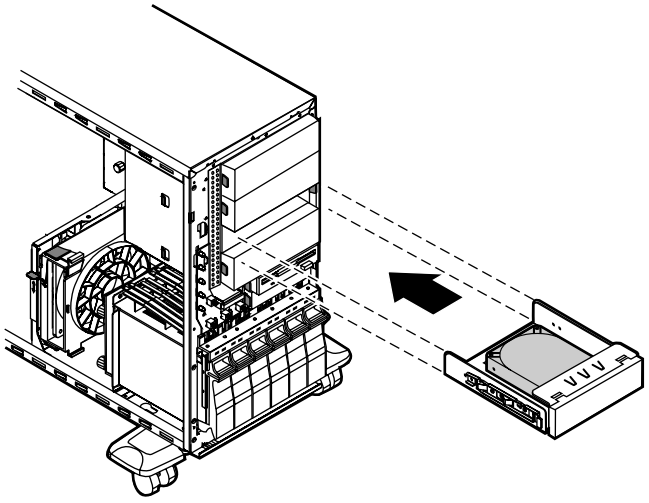
8 Remove the new hard drive from the static-free container and place it in the filler tray with the top (label side) up and the connectors facing away from the plastic face plate.

9 Set the drive jumpers to the appropriate settings (refer to your drive documentation for jumper settings.)

10 Install the drive in the filler tray with four screws (6-32 x 1/4-inch Phillips head - not provided).



11 Align the rails with the open drive bay, then slide the drive into the bay until the locking tabs snap into place (make sure that the data and power connectors on the drive face the inside of the server).



12 Connect the power and data cables to the drive. (See the drive documentation for proper cable orientation.)

13 Replace the bezel. (See “Replacing the bezel” on page 28.)

14 Close the case. (See “Closing the case” on page 27.)

15 Reconnect the power cord, the modem cord, and all other external peripheral devices, then turn on the system.

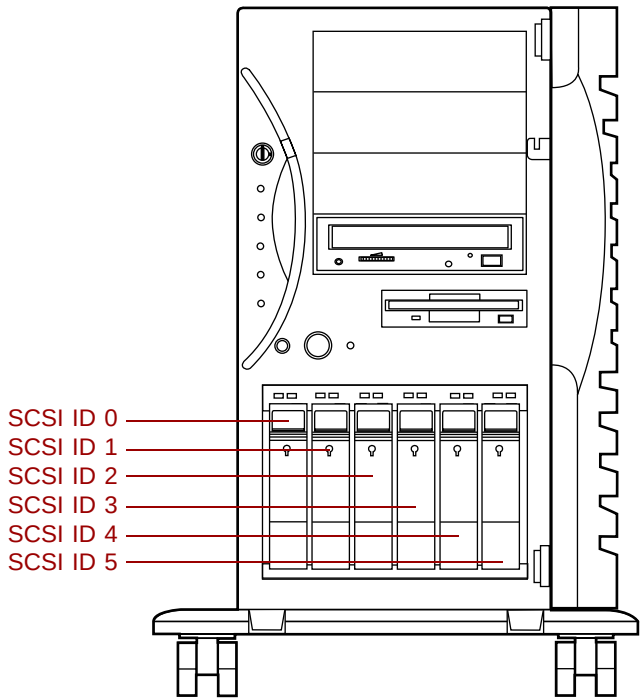
Replacing a hot-plug drive

The hot-plug drives are located at the bottom of the front panel. The hot-plug bay supports as many as six 1-inch high 3.5-inch SCA-II SCSI hard drives.

The hot-plug drives are assigned SCSI ID numbers by the hot-plug backplane with the drive at the far left side of the hot-plug bay assigned SCSI ID 0. The backplane assigns SCSI IDs to the other drives in order up to SCSI ID 5 at the far right side of the hot-plug bay.

Important

Gateway tests and verifies the operation and compatibility of the drives it sells. Especially in a hot-plug or mission-critical environment, additional or replacement drives must conform to Gateway standards.



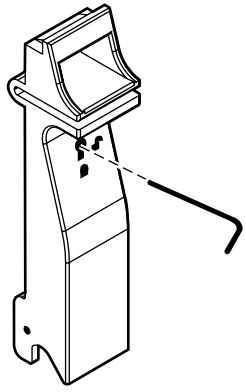
Install the drive in the left-most drive bay first and in increasing order by SCSI ID number thereafter.

To replace a failed drive:

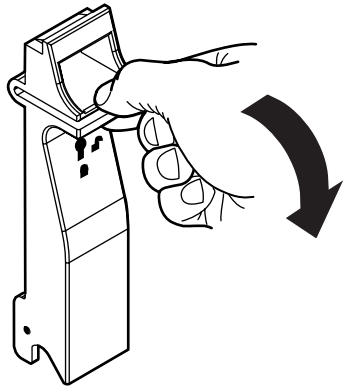
Caution

Before you remove the failed drive, use the appropriate software and utilities installed on the system to stop all activity on the failed drive. Instructions for using the software are provided by the software manufacturer. Failure to do so may destroy the data on the drive.

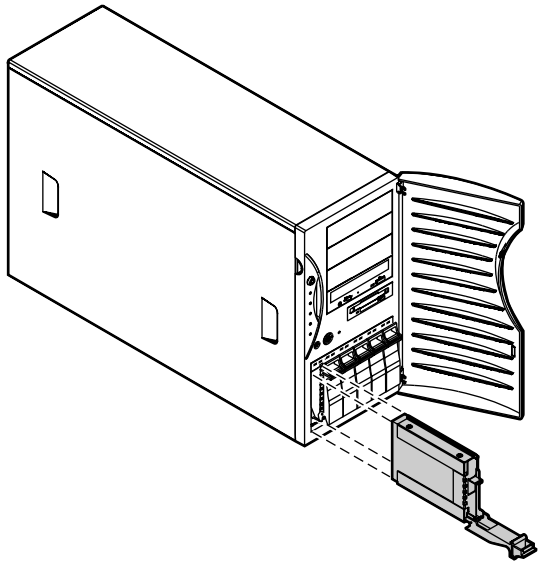
1. Use the Gateway™ server management utilities to determine which drive needs to be replaced.
2. If the drive carrier is locked, use the hex key to unlock the carrier. Locked drive carriers show a red flag in the slot on the carrier handle.



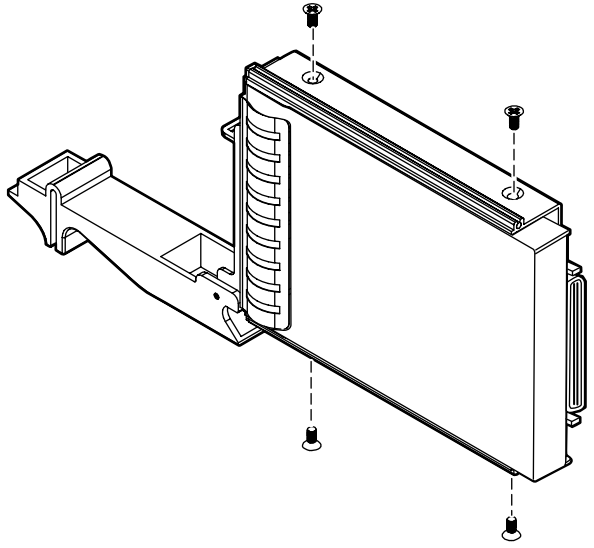
3. Remove the drive from the drive bay by pressing down on the carrier handle and rotating the handle out and down from the front of the server.



4 Continue pulling outward until the drive is entirely out of the system.



5 Remove the four screws that secure the drive to the carrier, then remove the drive.



6 Install the new drive in the carrier using the four screws you removed in Step 5.

7 Align the drive rails with the slots at the top and bottom of the drive bay.

8 Leaving the handle in the down position, push the drive all of the way into the drive bay until the handle starts to close because of contact with the front of the chassis.

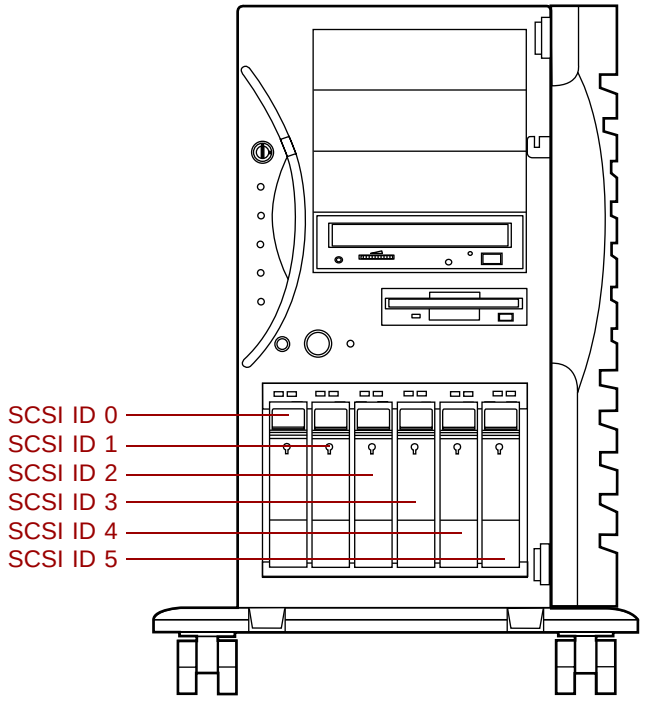
9 Make sure the hooks on the bottom of the handle engage the edge of the drive bay, then firmly close the handle.

10 Lock the drive carrier with the hex key.

Adding a hot-plug drive

The hot-plug drives are located at the bottom of the front panel. The hot-plug bay supports up to six 1-inch high 3.5-inch SCA LVD SCSI hard drives.

The hot-plug drives are assigned SCSI ID numbers by the hot-plug backplane with the drive at the far left side of the hot-plug bay assigned SCSI ID 0. The backplane assigns SCSI IDs to the other drives in order up to SCSI ID 5 at the far right side of the hot-plug bay. Install drives left to right.



Purchase additional SCSI drives through your Gateway sales representative. Specify the system into which you will install the drive to ensure that the correct drive and carrier are delivered.

Important

Gateway tests and verifies the operation and compatibility of the drives it sells. Especially in a hot-plug or mission-critical environment, additional or replacement drives must conform to Gateway standards.

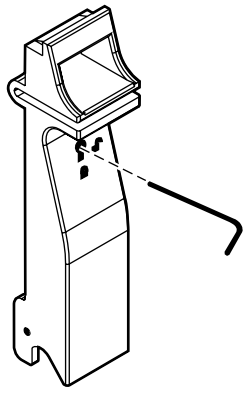
Removing an empty drive carrier

If the system ships with less than six drives installed, the empty drive bays contain drive carriers.

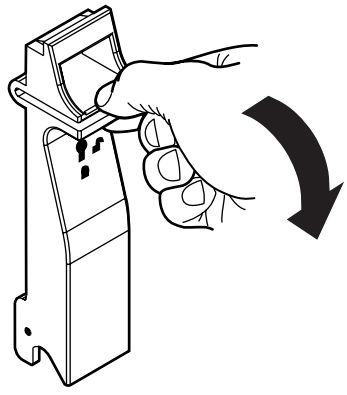
If you need to replace an empty drive carrier in the system, make sure it slides straight into place until the plastic handle begins to move upward, then close the handle.

To remove an empty drive carrier:

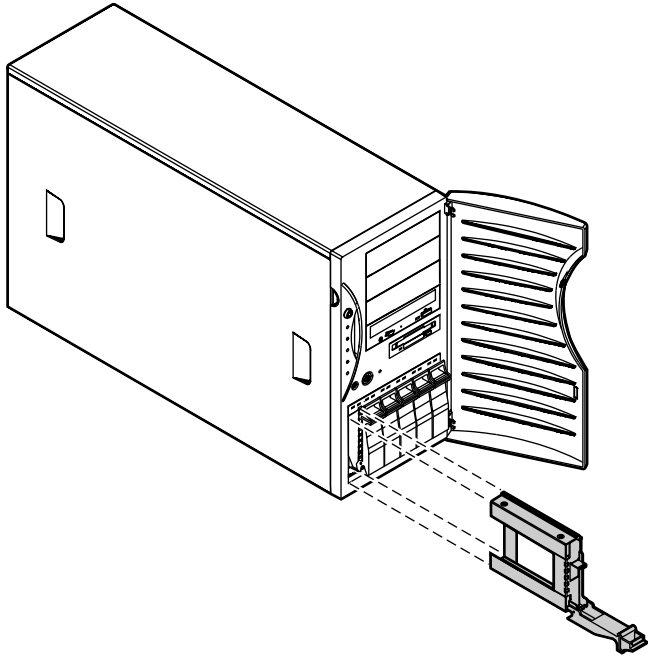
1. If the drive carrier is locked, use the hex key to unlock the carrier. Locked drive carriers show a red flag in the slot on the carrier handle.



2. Remove the drive carrier from the drive bay by pressing down on the carrier handle and rotating the handle out and down from the front of the server.



3 Continue pulling outward until the drive carrier is entirely out of the system.

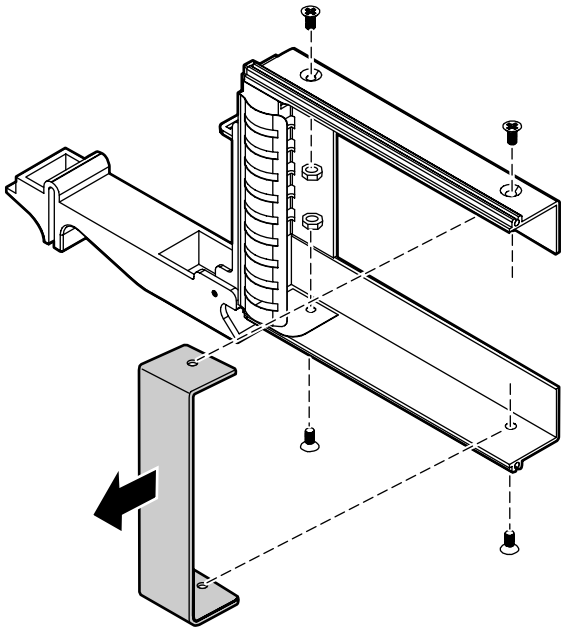


Installing a SCSI drive in the server

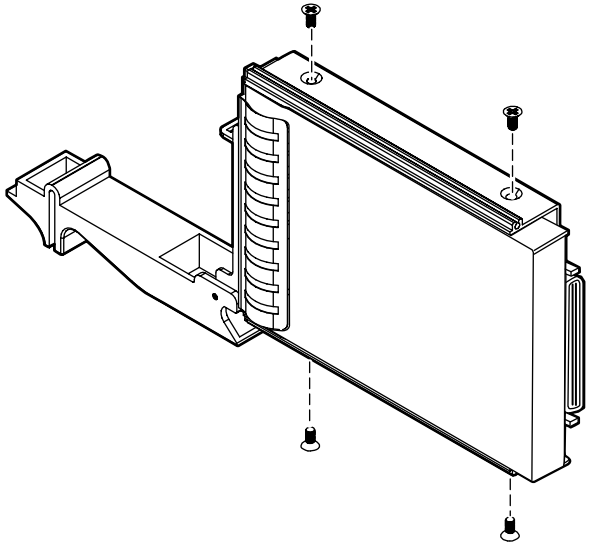
You do not need to configure individual drives before you install them in the server.

To install a SCSI drive in the server:

1. Remove the empty drive carrier as described in “Removing an empty drive carrier” on page 43.
2. Remove the four screws that secure the support bracket and front assembly to the rails.

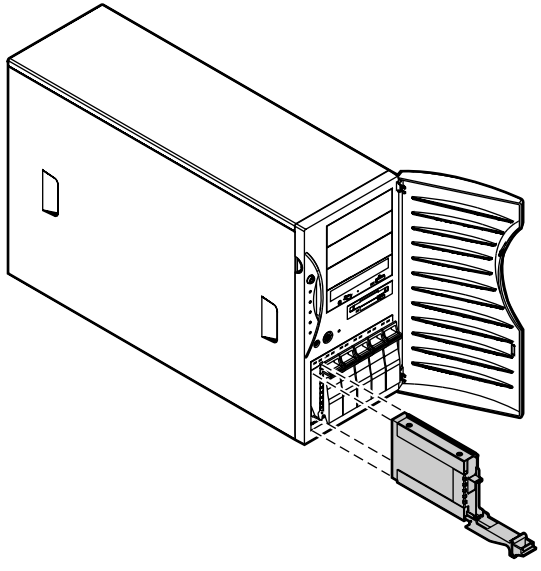


3 Install the drive into the carrier using the four screws you removed in Step 2.



4 Align the drive rails with the slots at the top and bottom of the drive bay.

5 Leaving the handle down, push the drive all of the way into the drive bay until the handle begins to close because of contact with the front edge of the chassis.



6 Make sure the hooks on the bottom of the handle engage the edge of the drive bay, then firmly close the handle.

7 Secure the drive by locking the drive carrier with the hex key.

Replacing the CD drive

The CD drive is located in one of the 5.25-inch drive bays at the top of the drive stack in the front of the chassis.

To replace the CD drive:

1 Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.

2 Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)

3 Remove the bezel. (See "Removing the bezel" on page 25.)

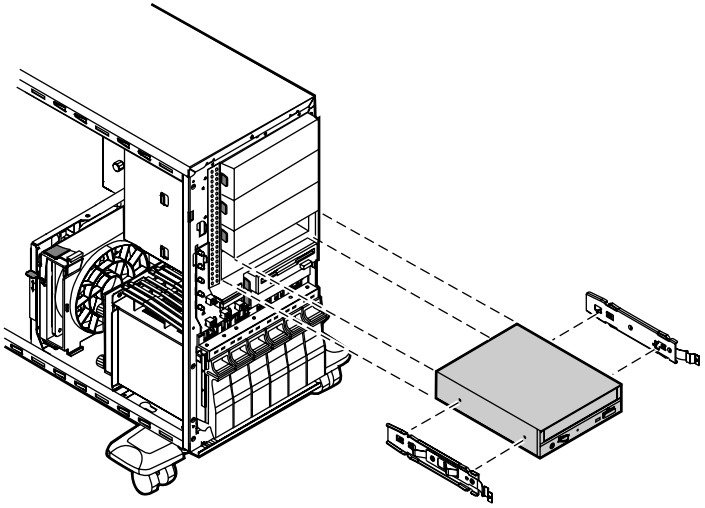
4 Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)

5 Locate the 5.25-inch CD drive.

6 Remove the power and data cables from the back of the drive, noting their locations and orientations. (You will reconnect these cables after you install the new drive.)

7 Disengage the rail locking tabs by pressing in on both front rail extensions, then move the drive slightly out of the bay by pushing on the back of the drive.

8 Pull the drive out of the chassis, then remove the rails on both sides of the drive.



9 Snap the rails onto the new drive in the same positions. The rails are labeled. Make sure the front rail extensions are to the front of the drive.

Important

The rails on the CD drive are different from those on the 3.5-inch drives. Make sure you install the correct rails on the CD drive.

10 Align the rails with the open bay, then slide the drive into the bay until the locking tabs snap into place.

11 Connect the power and data cables, making sure the cables are in their original positions. (See your drive documentation for proper cable orientation.)

12 Replace the bezel. (See “Replacing the bezel” on page 28.)

13 Close the case. (See “Closing the case” on page 27.)

14 Reconnect the power cord, the modem cord, and all other external peripheral devices, then turn on the system.

Adding additional 5.25-inch devices

You can use the three additional, externally accessible, 5.25-inch drive bays to install additional 5.25-inch devices such as a CD writer or a tape backup drive. Use the rails from the existing filler trays to install new drives. You may need to purchase an additional cable of sufficient length to connect the existing devices and the new device to the connector on the system board.

To install an additional 5.25-inch device:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Remove the filler tray from the front of the drive bay by pressing in on both front rail extensions, then move the tray slightly out of the bay by pushing on the back of the tray.
6. Pull the drive out of the chassis.

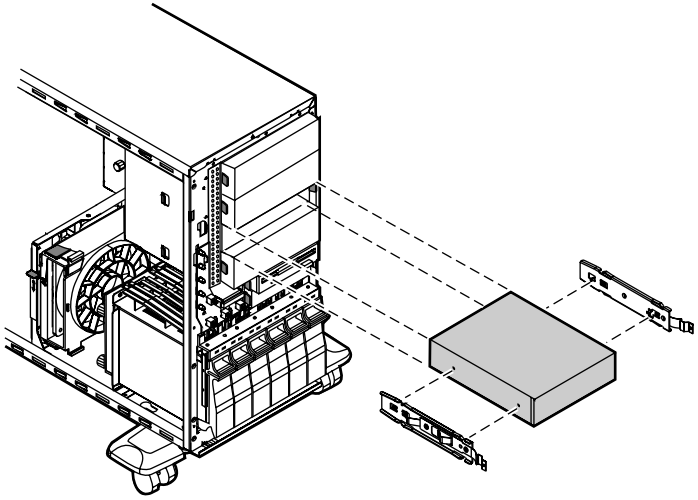
Caution



The server was designed to adhere to electromagnetic interference requirements and the tray is an integral part of the system. Installing an approved device should continue to maintain those standards. If you remove the device, you must reinstall the tray.

7. Snap the rails onto the drive, making sure the front rail extensions are towards the front of the device. The rails are labeled.

8 Align the rails with the bay, and slide the drive into the chassis until the locking tabs snap into place.



9 Connect the power and data cables, making sure the cables are in their original positions. (See the drive documentation for proper cable orientations.)

10 Replace the bezel. (See “Replacing the bezel” on page 28.)

11 Close the case. (See “Closing the case” on page 27.)

12 Reconnect the power cord, the modem cord, and all other external peripheral devices, then turn on the system.

13 Run the configuration software, if necessary.

Replacing or adding memory

The Synchronous Dynamic Random Access Memory (SDRAM) Dual Inline Memory Modules (DIMMs) supported by your system board conform to the following standards:

- 64 MB, 128 MB, 256 MB, and 512 MB ECC DIMMs.
- PC133-compliant, registered, parity, ECC SDRAM.

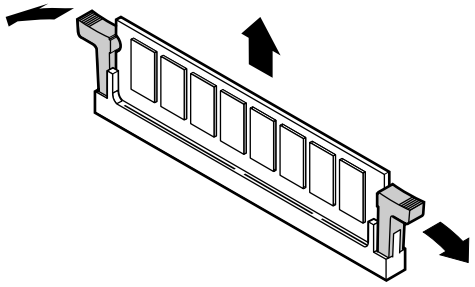
Memory is installed in four banks (slots) on the system board. When you are selecting and installing DIMMs, keep the following in mind:

- Registered DIMMs should not be combined with unbuffered DIMMs.
- Memory must be installed in reverse order, from right to left (from bank 3, through bank 0).
- No jumper settings are required for the memory size or type because the BIOS automatically detects this information.
- 2 GB maximum system memory.

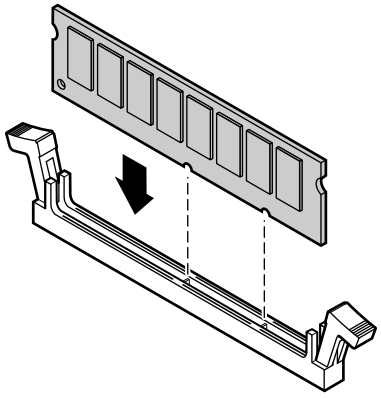
To replace DIMMs:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See “Preventing static electricity discharge” on page 22.)
3. Remove the bezel. (See “Removing the bezel” on page 25.)
4. Remove the left side cover panel. (See “Removing the side cover panel” on page 26.)

5 Pull open the socket latches on each side of the DIMM socket, then lift the DIMM out of the socket. Store the DIMM in an anti-static container.



6 Insert the new DIMM into the socket and align the two notches in the DIMM with the two notches in the DIMM socket.



7 Gently press the DIMM into the socket until it is firmly seated. Inserting the DIMM automatically locks the socket latches on each end of the DIMM.

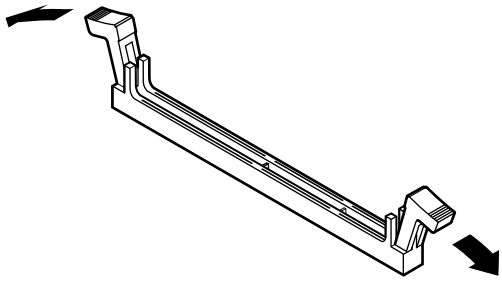
8 Replace the bezel. (See “Replacing the bezel” on page 28.)

9 Close the case. (See “Closing the case” on page 27.)

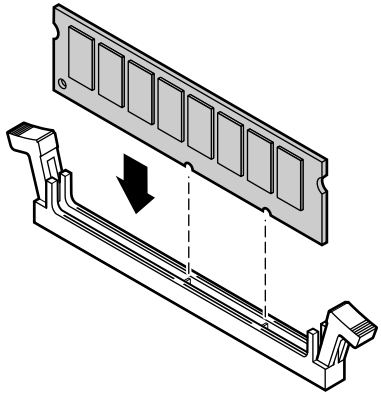
10 Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

To add DIMMs:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Pull open the socket latches on each side of the DIMM socket.



6. Insert the new DIMM into the socket and align the two notches in the DIMM with the two notches in the DIMM socket.



7. Gently press the DIMM into the socket until it is firmly seated. Inserting the DIMM automatically locks the socket latches on each end of the DIMM.
8. Replace the bezel. (See "Replacing the bezel" on page 28.)

9 Close the case. (See “Closing the case” on page 27.)

10 Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

Replacing or adding a processor

The system is compatible with the Pentium® III (FC-PGA Socket 370) 667 MHz and faster processors with 133 MHz front-side bus (FSB). As many as two processors may be installed in the system (they must have the same processor and FSB speed). Processor and FSB speed are automatically detected by the system, therefore there are no system board jumpers to set.

When adding or replacing a processor, order a processor upgrade kit from Gateway. The kit includes the processor, a heatsink, and a disposable, antistatic wriststrap. If you are installing a faster processor, your system may require a BIOS update to be compatible with the new processor. Voltage Regulator Modules (VRMs) for both processors are built into the system board.

Caution



A heatsink must be installed on each processor. Installing a processor without a heatsink could result in damage to, or failure of, the processor.

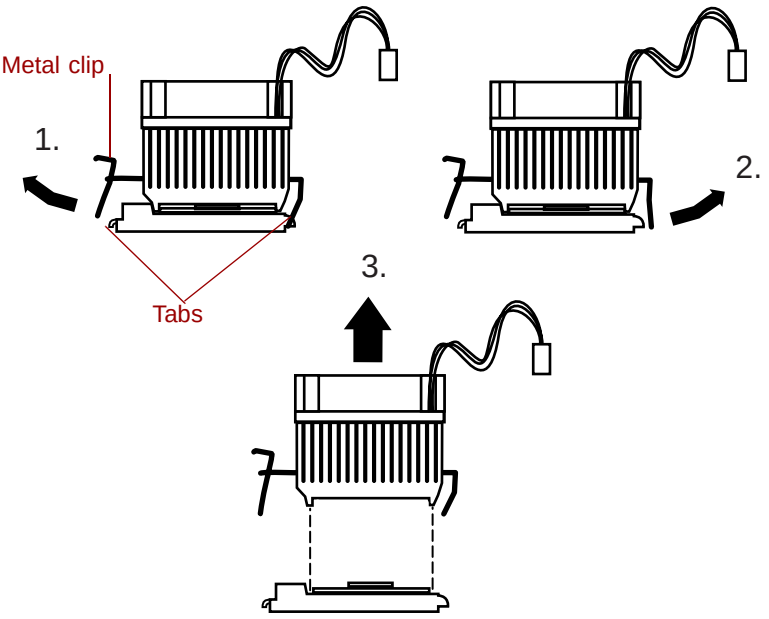
To replace the processor you must perform the following tasks:

- Remove the heatsink
- Remove the processor
- Install the new processor
- Replace the heatsink

To remove the heatsink:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See “Preventing static electricity discharge” on page 22.)
3. Remove the bezel. (See “Removing the bezel” on page 25.)
4. Remove the left side cover panel. (See “Removing the side cover panel” on page 26.)
5. Disconnect the fan cable from the fan connector on the system board. (See “System board” on page 8 for the location of the fan connector.)

6 Unhook the metal clip from the tab on the processor socket by pressing down on the clip and then pulling out on the clip.

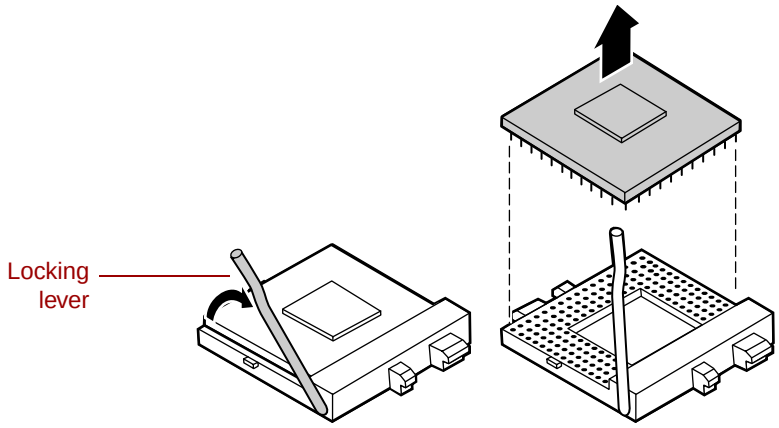


7 Unhook the other end of the metal clip.

8 Lift the heatsink straight up and off the processor.

To remove the processor:

1 Open the locking lever on the processor socket by moving the lever slightly out to the side and then lifting it up 90 degrees.

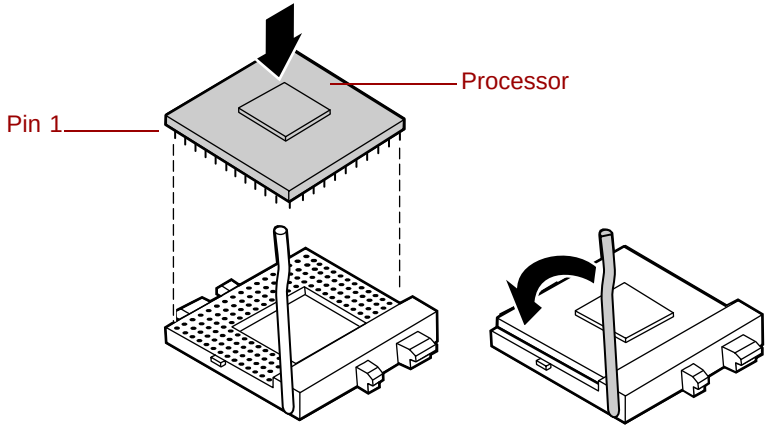


2 Lift the old processor straight up and out of the socket.

To install the new processor:

1 Hold the new processor over the empty processor socket and verify that pin 1 on both the processor and the socket are aligned. Pin 1 is near the marked corner.

2 Gently place the new processor into the socket.



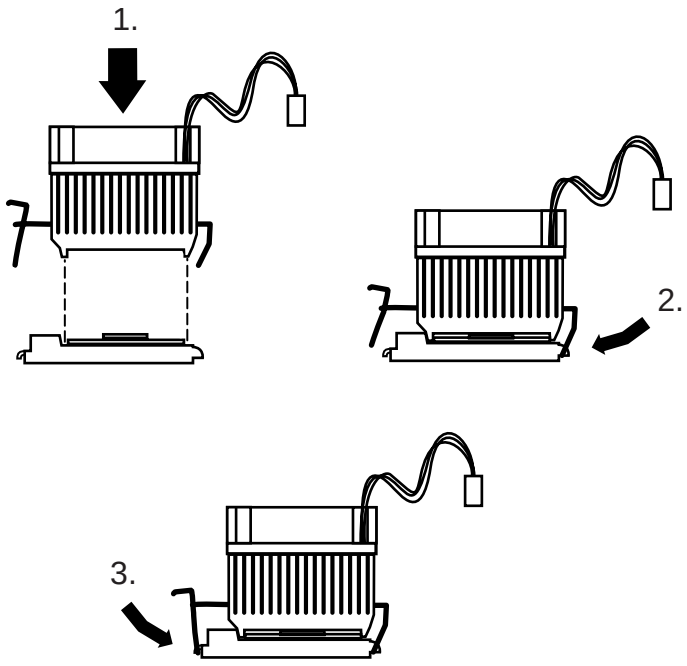
3 Secure the processor by lowering the locking lever until the lever latches into place. The processor will slip into place without pressure when aligned correctly.

To replace the heatsink:

1 Hook the metal clip on the heatsink to the plastic tabs on the processor socket. Make sure the heatsink is level with the processor and the metal clips are securely attached.

Caution

It is very important that the heatsink makes direct contact with the processor or else it will not cool correctly, resulting in processor failure.



2 Connect the heatsink fan cable to the fan connector on the system board.

3 Replace the bezel. (See “Replacing the bezel” on page 28.)

4 Close the case. (See “Closing the case” on page 27 for instructions.)

5 Reconnect the cords you removed, then turn on the server.

To add an additional processor:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Open the locking lever on the processor socket by moving the lever slightly out to the side and then lifting it up 90 degrees.
6. Hold the new processor over the empty processor socket and verify that pin 1 on both the processor and the socket are aligned. Pin 1 is near the marked corner.
7. Gently place the new processor into the socket.
8. Secure the processor by lowering the locking lever until the lever latches into place. The processor will slip into place without pressure when aligned correctly.
9. Install the heatsink as described in "To Replace the Heatsink" on page 58.
10. Connect the power supply cable of the processor fan to the second CPU fan connector on the system board (See "System board" on page 8 for location).
11. Replace the bezel. (See "Replacing the bezel" on page 28.)
12. Close the case by following the instructions on page 27.
13. Reconnect the cords you removed, then turn on the server.

Replacing the battery

The battery provides power for the system real-time clock and CMOS memory, which holds the system configuration information.

If your battery is failing you may notice the server clock slowing down and giving you the incorrect time.

Open the BIOS Setup utility and write down all the values in the various menus before replacing the battery. Replacing the battery resets the BIOS Setup utility to its default values.

Warning



Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by manufacturer.

Dispose of used batteries according to manufacturer's instructions.

Warnung



Explosionsgefahr bel falsch eingebautter batterie.

Ersetzen der batterien nur mit batterien des gleichen typs oder mit batterien vom hersteller empfohlenen typs.

Entsorgen gebrauchter batterien entsprechned herstellerangaben.

Attention



Il y a danger d'explosion s'il y a replacement incorrect de la batterie.

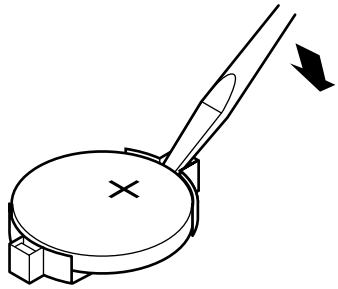
Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

To replace the battery:

1. Restart the server and start the BIOS Setup utility by selecting F1 when you are prompted to do so.
2. Write down the CMOS values from each tab in the BIOS Setup utility so you can reenter them after you replace the battery. For more information about the BIOS Setup utility. (See "About the BIOS Setup utility" on page 85.)

3. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
4. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
5. Remove the bezel. (See "Removing the bezel" on page 25.)
6. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
7. Locate the battery on the system board (see "System board" on page 8). The battery is circular and has the positive pole mark (+) on the top.
8. Using a small, flat-bladed screwdriver, carefully remove the battery from its socket on the system board.



9. Press the new battery in the socket with the positive pole up. Make sure you have pressed the battery down far enough for it to contact the base of the socket (it should snap into place).
10. Replace the bezel. (See "Replacing the bezel" on page 28.)
11. Close the case. (See "Closing the case" on page 27.)
12. Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.
13. If the CMOS data is not correct, change the information in the BIOS Setup utility using the data you recorded in Step 2.

Troubleshooting the battery installation

If you have problems after installing the new battery, try each of the items listed below:

- Turn off the server and make sure that all exterior cables are attached and secured to the correct connectors.
- Make sure that all power switches are on. If the server is plugged into a power strip, surge protector, or UPS, make sure it is turned on also.
- Enter the BIOS Setup utility and compare the settings on the screen with your notes or the system hardware manuals. Correct any discrepancies.
- Turn off the server, remove the cover, and make sure that all cables inside the case are attached securely. Also, make sure that the colored cable edges are aligned correctly and that the connectors did not miss any pins. Disconnect and reconnect the cables. Close the case (see "Closing the case" on page 27), reconnect the modem and power cords, then turn on the server.
- Turn off the server, remove the cover and, if you have the proper test equipment, make sure that the new battery has power. (Although unlikely, your new battery may be defective.) Close the case (see "Closing the case" on page 27), reconnect the power and modem cords, then turn on the server.

Expansion cards

The server has seven PCI expansion slots on the system board, that may be used for a variety of expansion cards. Two of these slots support 64-bit PCI cards and five support 32-bit PCI cards. (See “System board” on page 8.)

Replacing an expansion card

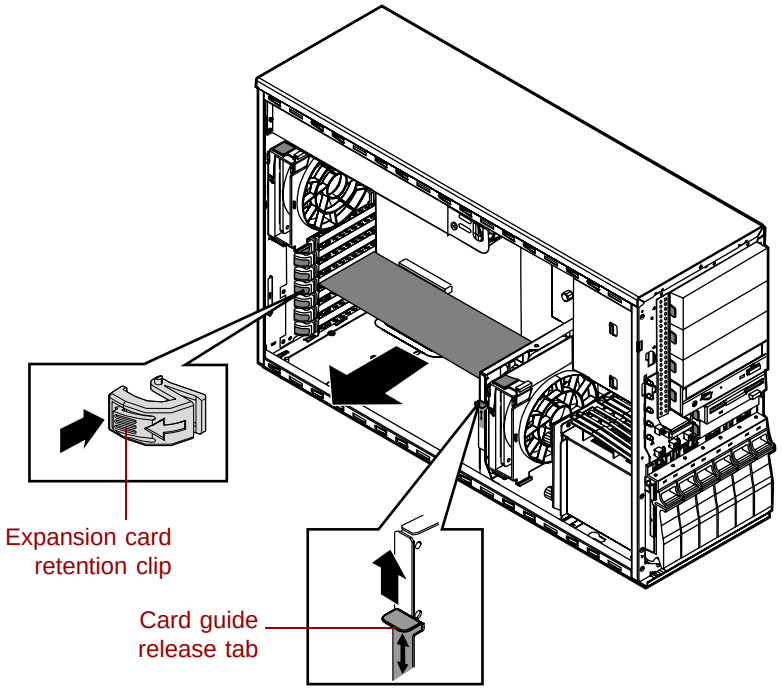
To replace an expansion card:

1. Set any jumpers and switches on the replacement card. (See the card instructions.)
2. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
3. Observe all safety and static electricity precautions. (See “Preventing static electricity discharge” on page 22.)
4. Remove the bezel. (See “Removing the bezel” on page 25.)
5. Remove the left side cover panel. (See “Removing the side cover panel” on page 26.)
6. Disconnect any cables attached to the card.

7 Remove the existing card by pressing gently on the expansion card retention clip, sliding the retention clip back through the back panel and pressing upwards on the card guide release tab (for full-length expansion cards).

Important

The card guide release tab is held in place during shipping by a cotter pin. Remove the cotter pin before moving the release tab. You can replace the cotter pin or leave it out.



8 Pull the card out of the slot.

9 Insert the bottom edge of the expansion card (the keyed edge with the contacts) into the slot on the system board and push in firmly to seat the card.

10 Once the card is securely placed, slide the card guide release tab down again (for full-length expansion cards) and press the expansion card retention clip through the back panel until it clicks into place to secure the card.

11 Connect any cables to the card (see card documentation for proper cable orientation).

12 Replace the bezel. (See "Replacing the bezel" on page 28.)

13 Close the case. (See "Closing the case" on page 27.)

14 Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

You may need to reconfigure the server after replacing an expansion card. You may also need to install upgrade software that came with the card. Check the card documentation for additional information.

Adding an expansion card

To add an expansion card:

1 Set any jumpers and switches on the card according to the card instructions, if necessary.

2 Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.

3 Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)

4 Remove the bezel. (See "Removing the bezel" on page 25.)

5 Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)

6 Locate an available slot and remove the slot cover by pressing the expansion card retention clip back through the back panel.

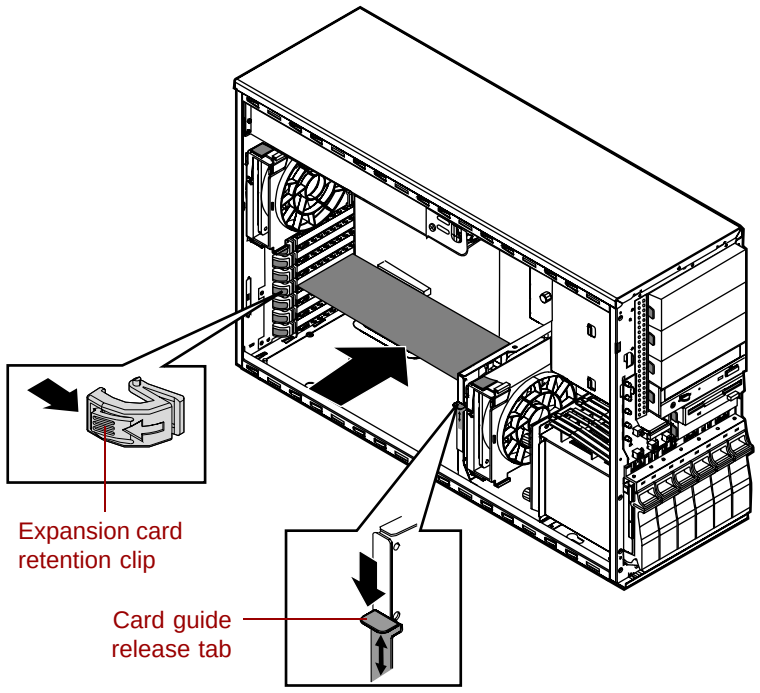
7 Pull out the slot cover.

8 Press the card guide release tab upward to release the cards and allow the new card to be inserted into the card guide (for full-length expansion cards).

Important

The card guide release tab is held in place during shipping by a cotter pin. Remove the cotter pin before moving the release tab. You can replace the cotter pin or leave it out.

9 Insert the bottom edge of the expansion card (the keyed edge with the contacts) into the slot on the system board and push in firmly to seat the card.



10 Once the card is securely placed, slide the card guide release tab down again (for full-length expansion cards) and press the expansion card retention clip through the back panel until it clicks into place to secure the card.

11 Connect any cables to the card (see card documentation for proper cable orientation).

12 Replace the bezel. (See “Replacing the bezel” on page 28.)

13 Close the case. (See “Closing the case” on page 27.)

14 Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

You may need to reconfigure the server after installing some expansion cards. You may also need to install software that came with the card. Check the card documentation for additional information.

Power supplies

The Gateway 7400 Server uses a redundant power supply offering fault tolerance and hot-swap capability. This section describes replacing the power supply and also describes the procedure for hot-swapping a power supply module.

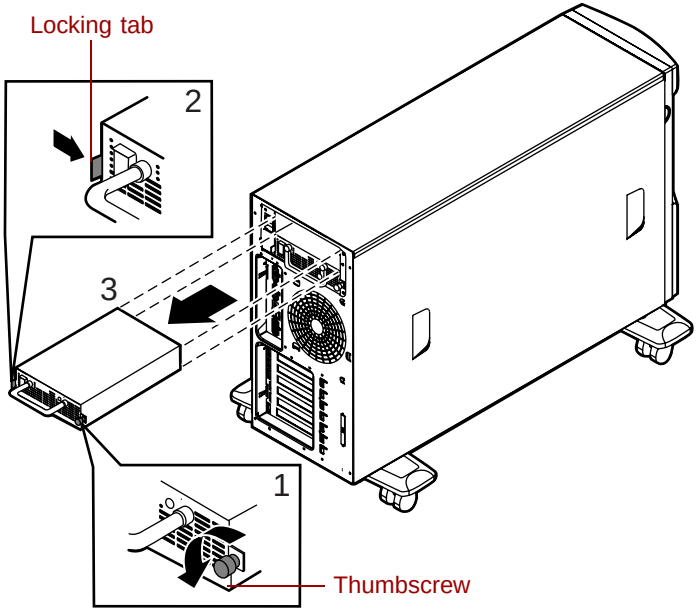
Replacing a redundant power supply module

If one of the two power supply modules fails, the other module can support the system while the failed module is replaced. An audible alarm indicates a failed module, and the corresponding power supply status LED will begin to flash. See “Front panel” on page 2 for the location and complete information on the function of the power supply status LEDs. You do not have to turn off the system to replace the failed module.

To replace a failed power supply module:

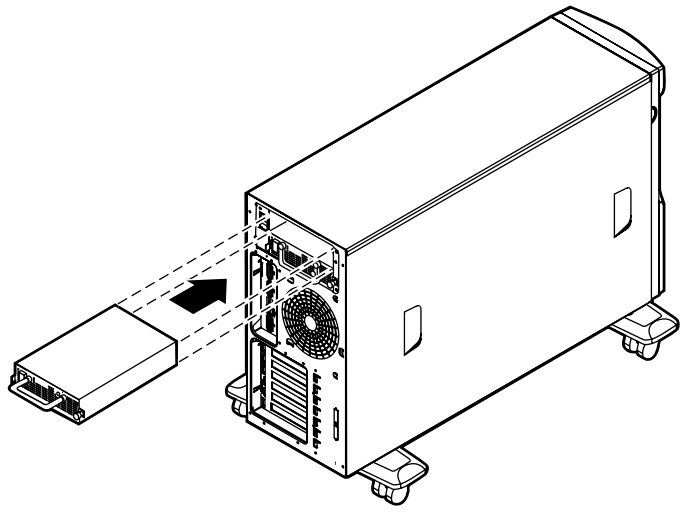
1. Determine which power supply module has failed. The module power LED (on the back of the power supply modules) turns off when the module fails.
2. Loosen the thumbscrew that secures the power supply module to the back panel.

3 Press the locking tab toward the center of the module while carefully pulling the failed module out of the power supply.



4 Carefully insert the new power supply module into the vacant slot, pressing firmly to seat the connector at the back.

5 Tighten the thumbscrew to secure the new module in position.



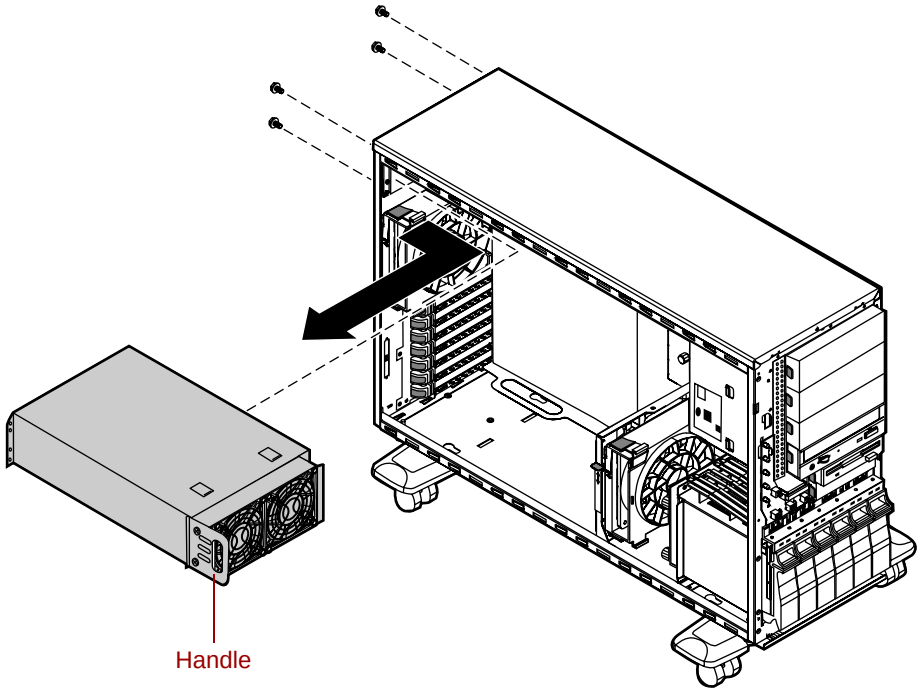
Replacing the power supply

The redundant power supply offers fault tolerance and hot-swap capabilities. However, if the power distribution board at the base of the power supply or some other part of the power supply fails, the entire power supply and its housing must be replaced. This type of failure is indicated by both power supply status LEDs flashing and an audible alarm, or the system will fail to power up.

To replace the power supply:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Disconnect the power supply connectors from all internal devices, including the 3.5-inch diskette drive, the CD drive, and all hard drives. Make a note of where everything is connected.
6. Disconnect the main power supply connector from the system board by pressing on the tab to release the connector, then gently pulling the connector from the board.

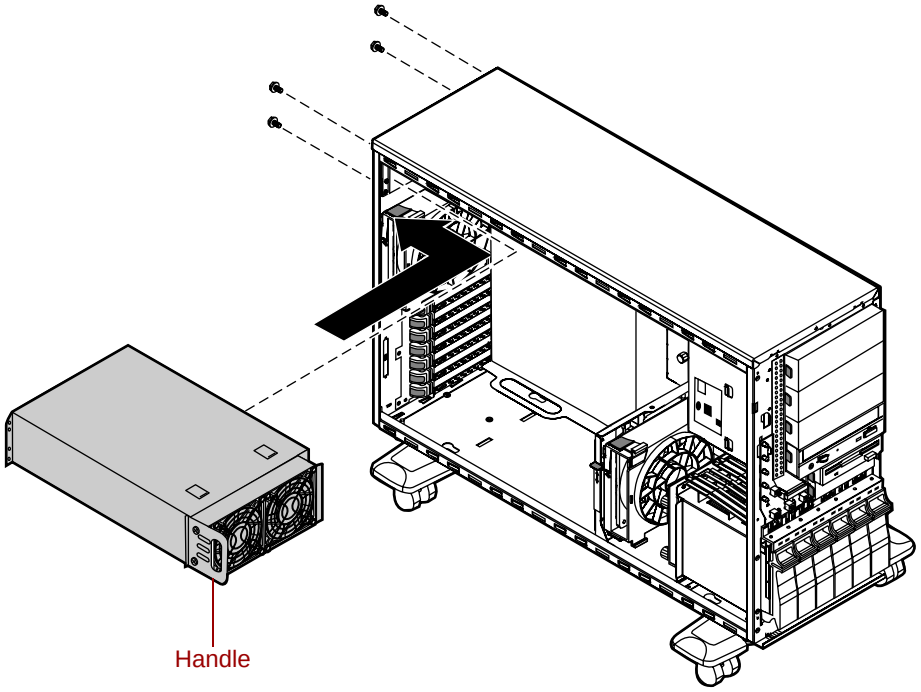
7 While supporting the power supply by the handle with one hand, remove the screws securing the power supply to the back panel.



8 Carefully lift the power supply out of the chassis using the handle attached to the power supply. Move the power supply forward to clear the support bracket, then tilt the left side of the power supply down to clear the side cover mounting rail as you pull it out.

9 Make sure that the new power supply matches the one you removed. The mounting holes should line up correctly, and the specifications and power output connectors should be the same.

10 Place the new power supply in the proper position in the chassis and line up the mounting holes with the holes in the chassis.



11 Replace the screws securing the power supply to the back panel.

12 Reconnect the power connectors to the system board and to all internal devices.

13 Replace the bezel. (See “Replacing the bezel” on page 28.)

14 Close the case. (See “Closing the case” on page 27.)

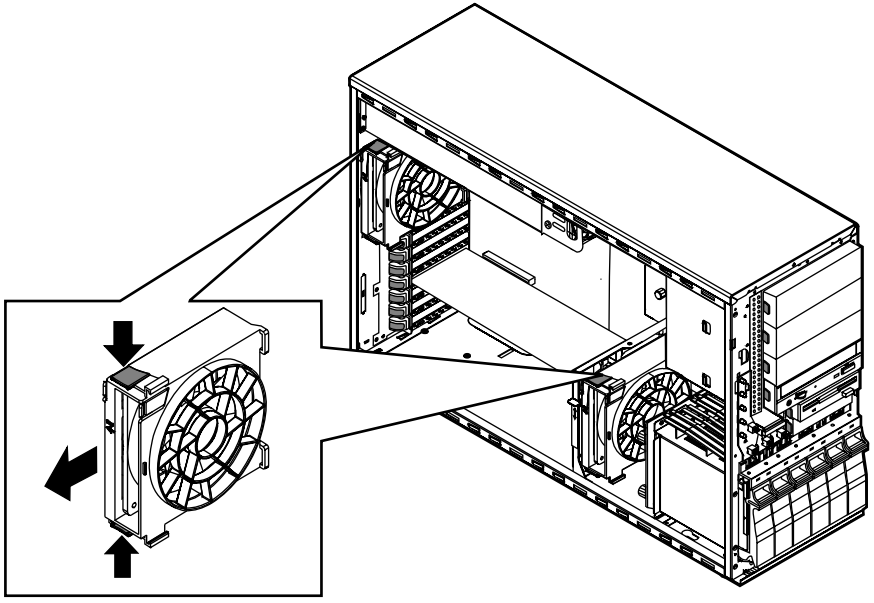
15 Reconnect the power cord, the modem cord, and all external peripherals, then turn on the system.

Replacing the back panel and drive cage fans

The back panel fan is located below the power supply on the back panel. The drive cage fan is located behind the hot-plug drive cage, between the cage and the system board. (See the illustration on page 6 for more information.)

To remove the back panel or hot-plug cage fan:

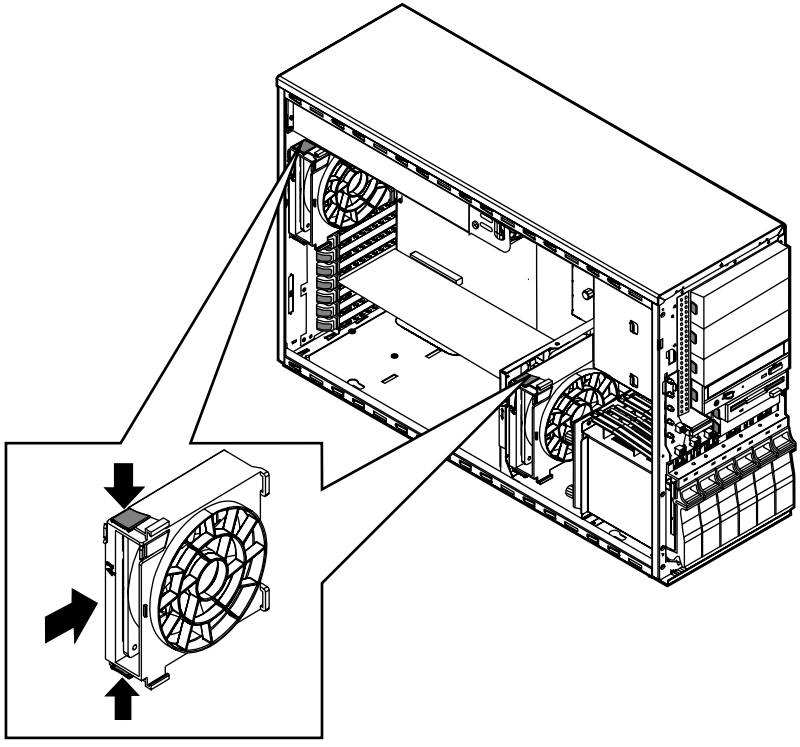
1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Depress the two locking tabs on the fan bracket, then disengage the two retaining tabs from either the back panel or the hot-plug drive cage.



6 Carefully remove the fan from the chassis.

7 Disconnect the fan power cable from the connector on the system board. Note where the connector was attached.

8 Place the new fan bracket unit into the chassis by engaging the two retaining tabs with the tabs on the back panel or the hot-plug cage and the release tabs with the appropriate slots.



9 Connect the fan power cable to the appropriate connector on the system board.

10 Replace the bezel. (See “Replacing the bezel” on page 28.)

11 Close the case. (See “Closing the case” on page 27.)

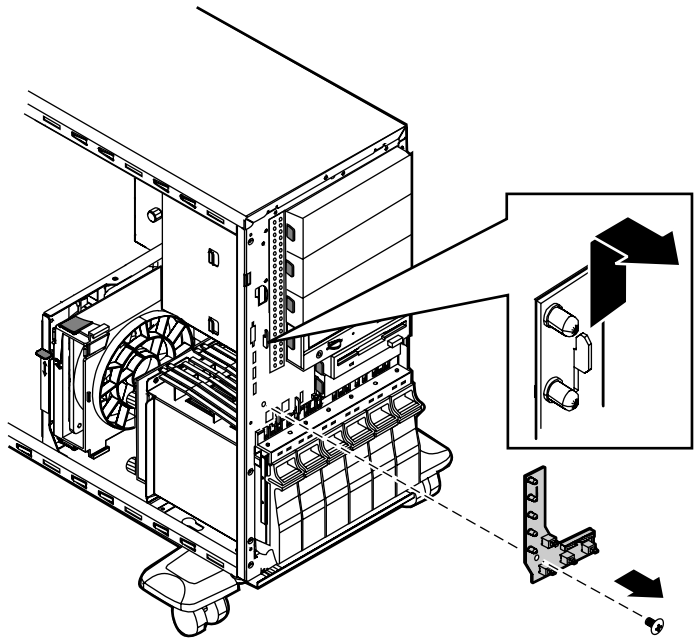
12 Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

Replacing the control panel board

The control panel board is mounted on the front of the chassis, behind the bezel.

To replace the control panel board:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Disconnect the front panel connector from the control panel board.
6. Remove the screw that secures the board to the front of the chassis.
7. Lift the control panel board off of the hooks on the front panel, then remove it.



8. Install the new control panel board by placing the mounting slots of the control panel board on the tabs on the front of the chassis, then slide the board down until it locks into place. Make sure the front panel cable is out of the way as you install the board.

9. Replace the screw you removed in Step 4.

10. Plug the control panel cable into the connector on the control panel board.

11. Replace the bezel. (See “Replacing the bezel” on page 28.)

12. Close the case. (See “Closing the case” on page 27.)

13. Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

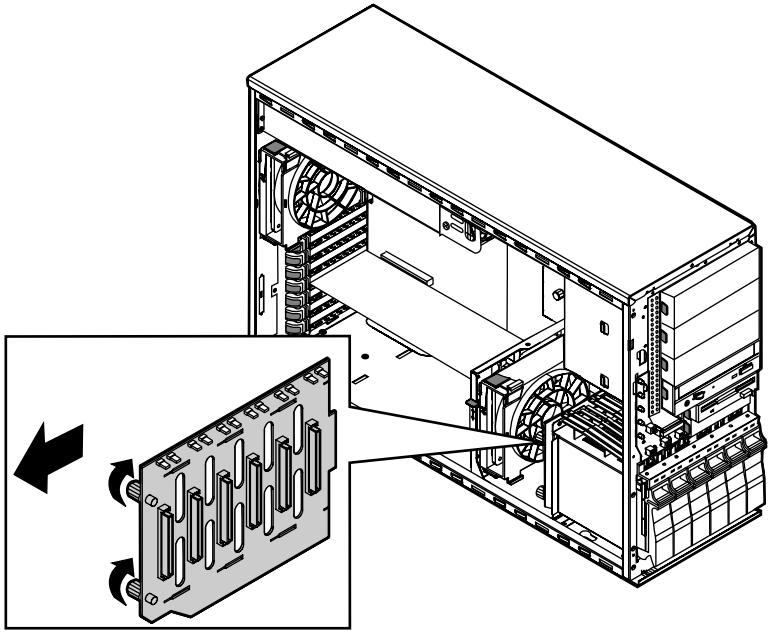
Replacing the SCSI backplane

The six drive SCSI backplane is at the back of the drive cage. The backplane supports as many as six hot-pluggable LVD SCSI drives. The backplane provides activity LEDs for each drive.

To replace the SCSI backplane:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See “Preventing static electricity discharge” on page 22.)
3. Remove the bezel. (See “Removing the bezel” on page 25.)
4. Remove the left side cover panel. (See “Removing the side cover panel” on page 26.)
5. Disconnect all cables to the hot-plug backplane, noting the connector locations so you can reconnect them after replacing the backplane.
6. Remove all hot-plug drives, being careful to note which drive was in which slot.

7 Loosen the two captive thumbscrews that secure the backplane in the hot-plug cage bracket.

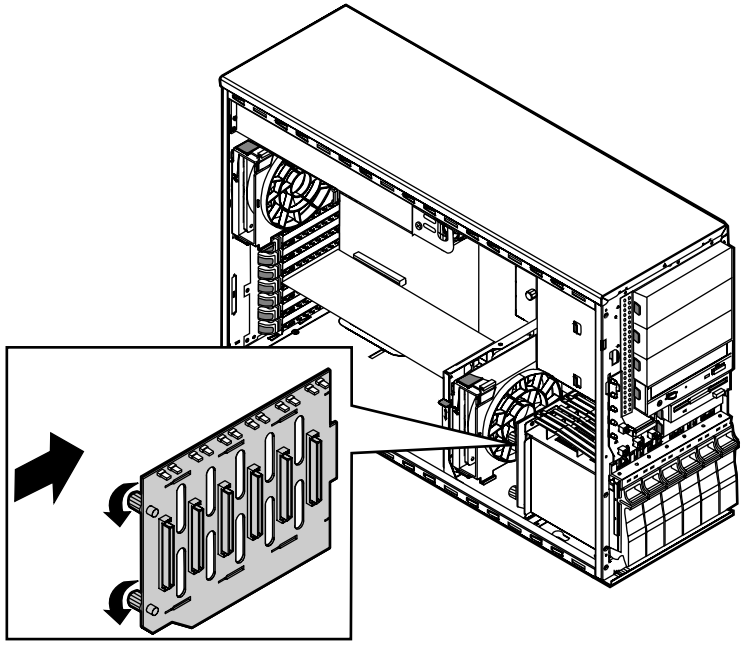


8 Pull the backplane out to the side of the chassis, then toward the back of the system to remove it from the retention hooks.

9 Lift the backplane out of the chassis.

10 Set any jumpers on the new backplane that are required for your hot-plug configuration. (See “SCSI backplane board” on page 10 for instructions.)

11 Place the backplane onto the hot-plug cage bracket, making sure the hooks on the bracket fit into the slots on the backplane.



12 When the backplane is securely in place, tighten the two captive thumbscrews.

13 Reconnect all cables on the backplane to the correct connectors.

14 Replace all hot-plug drives. Be careful to replace them in the same slots that they were in before you removed them.

15 Replace the bezel. (See “Replacing the bezel” on page 28.)

16 Close the case. (See “Closing the case” on page 27.)

17 Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

Replacing the system board

The system board integrates the other elements of the system, such as the processor, memory, storage, networking, and communications, and lets them operate in a coordinated and useful way.

Important

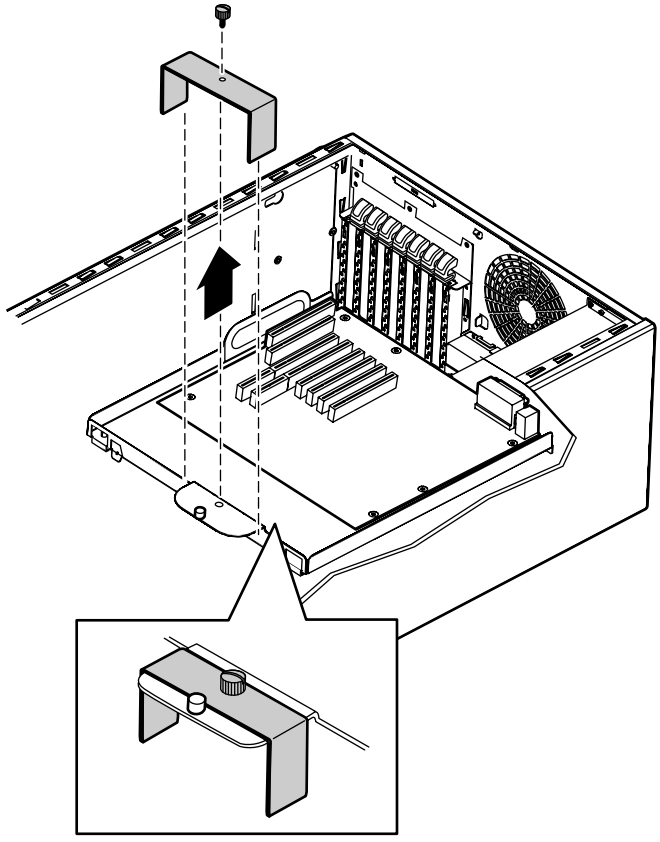


All references to front, rear, left, or right on the server are based on the server being in a normal, upright position, as viewed from the front.

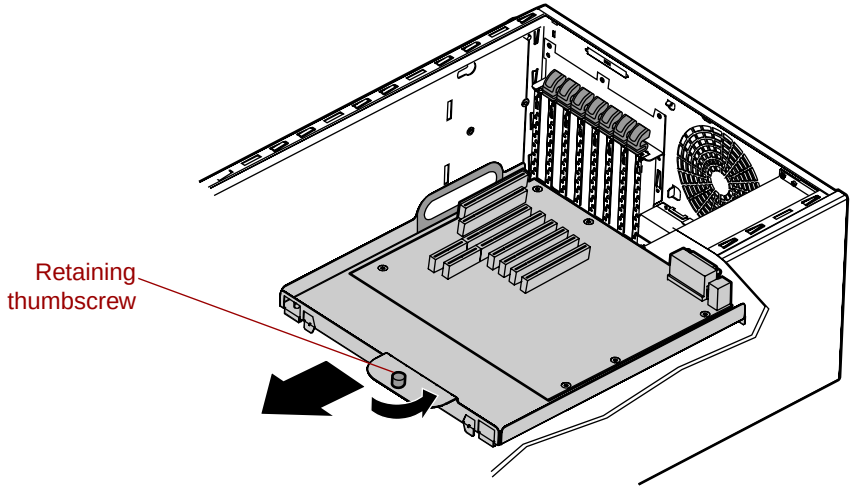
To replace the system board:

1. Turn off the system and disconnect the power cord, modem cord (if installed), and all external peripheral devices.
2. Observe all safety and static electricity precautions. (See "Preventing static electricity discharge" on page 22.)
3. Remove the bezel. (See "Removing the bezel" on page 25.)
4. Remove the left side cover panel. (See "Removing the side cover panel" on page 26.)
5. Place the chassis gently on its right side.
6. Remove all expansion cards from the system. (See "Replacing an expansion card" on page 63.)
7. Remove the back panel fan (see "Replacing the back panel and drive cage fans" on page 73.)
8. Disconnect all cables from the system board, including the power cables from the power supply, noting their locations and orientations (you will reconnect these cables after you install the new system board).

9 Remove the thumbscrew from the system board retaining bracket (if your system is so equipped), and lift the bracket from the board support tray.

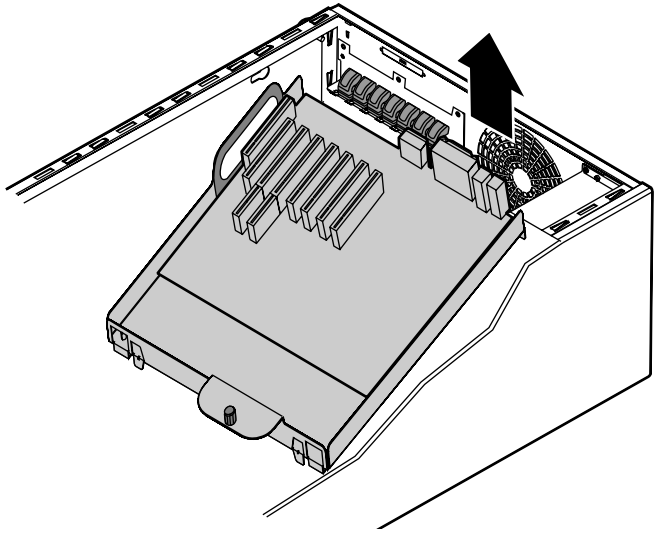


10 Loosen the retaining thumbscrew securing the board support tray to the right side of the chassis.



11 Slide the board support tray toward the front of the chassis slightly to disengage it from the stand-off retention hooks.

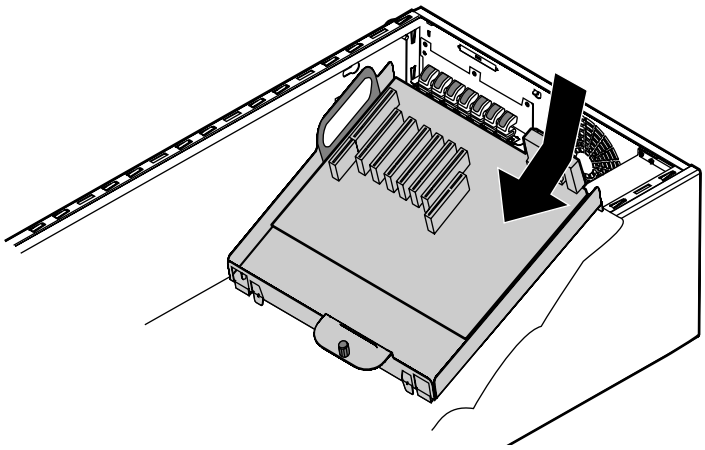
12 Using the handle at the bottom of the board support tray, pull the back edge of the system board (the edge against the back panel) out of the chassis.



13 Remove the ten screws securing the system board to the support tray and remove the board, then place it in an anti-static bag or container.

14 Install the replacement system board on the tray using the screws you previously removed.

15 Holding the board support tray by the handles, place it in the chassis, right edge first. Arrange the cables carefully to prevent tangling as you install the board and tray assembly.



16 Holding the board support tray in place, tighten the retaining thumbscrew on the right edge of the board support tray.

17 Replace the system board retaining bracket (if your system is so equipped) and reinstall the retaining bracket thumbscrew.

18 Replace the back panel fan (see “Replacing the back panel and drive cage fans” on page 73.)

19 Replace any expansion cards that you removed in Step 4 (see “Replacing an expansion card” on page 63.)

20 Reconnect all cables on the system board to the correct connectors.

21 Return the chassis to an upright position.

22 Replace the bezel. (See “Replacing the bezel” on page 28.)

23 Close the case. (See “Closing the case” on page 27.)

24 Reconnect the power cord, the modem cord, and all other peripherals, then turn on the system.

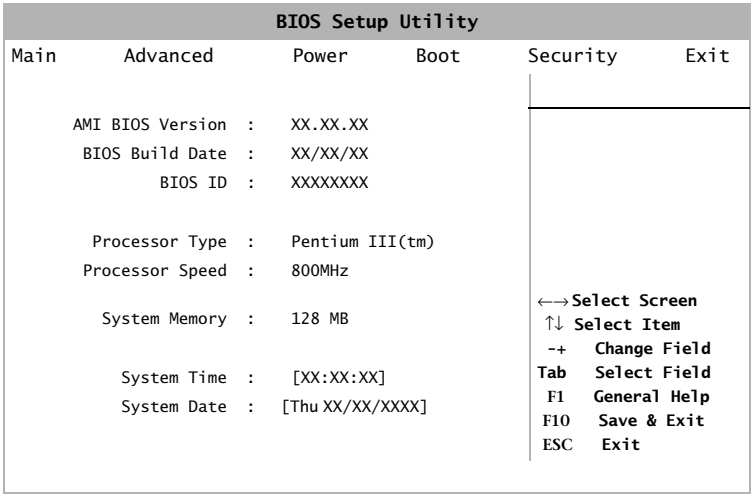
Using the BIOS Setup Utility

5

About the BIOS Setup utility

The server's BIOS has a built-in setup utility that lets you configure several basic system characteristics. The settings are stored in battery-backed RAM and are retained even when the power is off.

Open the BIOS Setup utility by restarting the server, then pressing F1 when the Gateway logo screen appears during startup. The Main BIOS Setup utility screen opens. It may not look exactly like the screen shown below.



As you select items on the Main menu or in submenus, you see specific information related to the current selection in the Item Specific Help box.

The command bar shows the keystrokes necessary to access help, navigate through the menus, and perform other functions.

- F1 opens the Help screen, providing general help for using the BIOS Setup utility.
- The ↑ (up arrow) and ↓ (down arrow) keys select items in the menu.
- The ← (left arrow) and → (right arrow) keys move you between the menus.
- ENTER either moves you to a submenu screen when a selected item is preceded by > or activates a selected field.
- ESC closes the screen you are in and returns you to the previous screen or opens a dialog box allowing you to exit from the BIOS Setup utility.
- F10 opens a screen that lets you save all settings, then exit the BIOS Setup utility.

The main screen has the following menu selections at the top of the screen:

- **Main** gives you access to basic information and settings related to your system hardware and configuration.
- **Advanced** gives you access to information and settings for system resources, hardware, and system configuration.
- **Power** gives you access to information and settings for power management features.
- **Boot** gives you access to information and settings for boot features and boot sequences.
- **Security** gives you access to settings related to system access passwords and security settings (See “System security” on page 98).
- **Exit** gives you access to options for exiting the BIOS Setup utility.

Refer to the Help box on the right side of the BIOS Setup screens for information about menu items.

Updating the BIOS

If you need a new version of the BIOS, you can download the BIOS update from Technical Support area on the Gateway Web site (www.gatewayatwork.com) and install the new version from a diskette.

To update the BIOS you need to perform the following tasks in sequence:

- Create a bootable diskette
- Note the current BIOS settings
- Create the BIOS update diskette
- Update the BIOS
- Restore the BIOS settings

Follow the detailed instructions for updating the BIOS that are included in the self-extracting file that you can download from the Technical Support area of Gateway's Web site.

Important



To add BIOS support for faster processors, you may need to update the BIOS. If you do not receive the messages "AP microcode OK" and "BSP microcode OK" during the boot sequence, you will need to update the BIOS.

Setting the configuration switches

The system board has a configuration switch block related to the BIOS. You can use specific switches to reset the CMOS settings to the BIOS defaults, or to erase a misplaced or forgotten password. For the location of the configuration switch block, see “System board” on page 8.

Caution



Moving any of these switches while the power is on can damage your server. Always turn off the server and unplug the power cord from the server before changing switch settings.

The Clear Password switch

The Clear Password switch on the system board (SW3) lets you clear the existing system passwords in case they are misplaced or forgotten, or if the system administrator is unavailable. For normal operation, SW3 should be set to the OFF position. To clear the passwords, SW3 should be set to the ON position.

Once the switch is set to the ON position, passwords will be disabled, allowing you to go directly to the operating system or to enter the BIOS Setup without entering a password. To set up a new password, enter the BIOS Setup and enter the password as you normally would, then turn off the system. Prior to turning on the system again, open the system, return SW3 back to the OFF position, then close the system. Make sure you turn off the server and unplug the power cord before moving the switch.

The Clear CMOS switch

The Clear CMOS switch on the system board (SW4) lets you clear all BIOS Setup settings. For normal operation, SW4 should be in the OFF position. To clear the CMOS settings, SW4 should be turned to the ON position. Make sure you turn off the server and unplug the power cord before moving the switch.

Once the switch is set to the ON position, the system passwords will be cleared when the system goes through the POST routine. When this occurs, the following error message will appear:

CMOS checksum bad

Press F1 to run Setup
Press F2 to load default values and continue

After selecting the appropriate option, enter any required information and continue. When you turn off the system again, open the system, set the switch back to the OFF position, then close the system.

Managing Your System

6

Protecting against power source problems

Surge suppressors, line conditioners, and uninterruptible power supplies can help protect your system against power source problems.

Surge suppressors

During a power surge, the voltage level of electricity coming into your system can increase far above normal levels and cause data loss or system damage.

Protect your server and peripherals by connecting them to a surge suppressor, which will absorb voltage surges and prevent them from reaching your server.

When purchasing a surge suppressor:

- Make sure the surge suppressor meets the appropriate product safety certification for your location, such as Underwriters Laboratories (UL).
- Check the maximum amount of voltage the suppressor allows to pass through the line. The lower the voltage that the suppressor allows to pass through, the better the protection for your system.

- Check the energy absorption (*dissipation)* rating. The higher the energy absorption rating, the better the protection for your system.
- Check for line-conditioner capabilities. A line conditioner smooths out some of the normal line noise (small voltage fluctuations) of an electrical supply.

Line conditioners

A line conditioner protects your system from the small fluctuations in voltage from an electrical supply. Most systems can handle this variation, called *line noise,* without problems. However, some electrical sources include more line noise than normal. Line noise can also be a problem if your system is located near, or shares a circuit with, a device that causes electromagnetic interference, such as a television or a motor.

Some surge suppressors and uninterruptible power supplies include simple line-conditioning capabilities.

Uninterruptible power supplies

Use a standby uninterruptible power supply (UPS) to protect your server from data loss during a total power failure. A UPS uses a battery to keep your server running temporarily during a power failure and lets you save your work and shut down your server. You cannot run your server for an extended period of time while using only the UPS.

Maintaining and managing your hard drive

Regular maintenance can keep your hard drive operating efficiently and good file management can keep your system free of unwanted files while making important files secure and easier to find.

Hard drive maintenance utility

If you are using the Windows NT operating system, you can help maintain the performance of your hard drive by regularly using Check Disk. If you are using another operating system, refer to your operating system documentation for available hard drive maintenance utilities.

Using Check Disk in Windows NT

Bad sectors are parts of a hard drive or diskette that will not hold data. A lost allocation unit is a group of sectors that has lost its place in the table that the operating system uses to locate files. Check Disk checks the hard drive for bad sectors or lost allocation units and lets you fix them.

Use Check Disk from once a week to once a month, depending on how often you use your system. Also use Check Disk if you have any hard drive problems.

To use Check Disk:

1. Double-click the **My Computer** icon. The My Computer window opens.
2. Right-click the drive you want to check.
3. Select **Properties**. The drive's properties window opens.
4. Click the **Tools** tab.
5. At **Error-checking,** click **Check Now**. The Check Disk window opens.
6. Scan the entire hard drive by selecting **Scan for and attempt recovery of bad sectors**.
7. Click **Start.** Check Disk checks the drive for errors.
8. Follow any on-screen instructions for completing the scan.

Hard drive management practices

By deleting unneeded files from your hard drive and managing the space that is automatically allocated for saving certain files, you can help maintain the performance of the hard drive. We suggest that you first check your hard drive for available space, then back up important files prior to deleting unneeded files, in case you delete important files by mistake.

Checking hard drive space

In Windows NT, you can see a chart of the available hard drive space. If you are using another operating system, refer to your software documentation for available hard drive management utilities.

To check hard drive space:

1. Double-click the **My Computer** icon on the desktop. The My Computer window opens.
2. Right-click the drive you want to check.
3. Select **Properties**. The drive's properties window opens. The **General** tab shows you the available and used space on the drive.

Backing up files

Regularly backing up your files protects you from losing data and lets you keep fewer files on your hard drive. Back up old files to a large capacity disk drive or tape drive and delete the files from your hard drive. You can use the software that came with your tape backup drive or your large capacity disk drive to back up the files.

You can also back up files by running the Backup utility that came with your operating system. In Windows NT, Backup copies files to a tape drive.

To run Backup in Windows NT:

1. Click **Start**, then select **Programs**, **Administrative Tools,** then **Backup**.
2. Follow the on-screen instructions.

Deleting unneeded files

By deleting unneeded files from the hard drive, you free up space on the hard drive and help improve hard-drive performance. The following sections give you some simple ways to delete unneeded files.

Deleting Windows temporary files

During normal operation, Windows constantly creates new temporary (.tmp) files. You can safely delete all but the most recent .tmp files.

To delete .tmp files:

1. Open Windows Explorer, then select **Tools**, **Find**, then **Files and Folders**.
2. In the **Named** text box, type ***.tmp**
3. In the **Look in** drop down list, select your drive letter.
4. Click **Find Now**. The list of .tmp files appears.
5. Click **Modified** above the list. To see the **Modified** button, you may need to maximize the Find window. The list is sorted by date.
6. Highlight all the files in the list except those with the current date.
7. Press SHIFT + DELETE. A dialog box opens asking if you want to delete the files.
8. Click **Yes**. The files are deleted.

Deleting temporary Internet files

As you visit Web sites, your browser stores temporary Internet files on your hard drive in a *memory cache* and a *disk cache*. Files in the memory cache are removed when you turn off your server. Files are saved in the disk cache until the space designated for the cache is full. See your browser's help files for instructions on emptying the disk cache.

You can save space on the hard drive by decreasing the size of the Internet file disk cache. See your browser's help files for instructions.

Emptying the Recycle Bin

When you delete a file from your hard drive in Windows NT, it is not immediately removed from the hard drive. Instead, the file is moved into the Recycle Bin. Because files are stored in the Recycle Bin and not deleted from the hard drive immediately, you can retrieve a file that you accidentally delete from the hard drive.

To delete all the files from the Recycle Bin, right-click the **Recycle Bin** icon on the desktop, then click **Empty Recycle Bin**.

You can save space on the hard drive by decreasing the size of the Recycle Bin.

To decrease the size of the Recycle Bin:

1. Right-click the **Recycle Bin,** then select **Properties**.
2. At the Global tab, select either **Configure drives independently** or **Use one setting for all drives.**
3. If you are configuring drives independently, click the tab for the drive you want to configure.
4. Move the slider to set the size of the Recycle Bin. A good initial setting is 5%.
5. Click **OK**.

Protecting your server from viruses

A *virus* is a program that attaches itself to a program or data file on a server, then spreads from one server to another. Viruses can damage data, cause servers to malfunction, and can display annoying or offensive messages. Some viruses can go unnoticed for long periods of time because they are activated by a certain date or time. Protect your server from viruses by:

- Using an anti-virus program to check files and programs that are on diskettes, attached to e-mail messages, or downloaded from the Internet. After you run the anti-virus program you can back up your files to diskettes, a separate hard drive, or a high-capacity storage drive.
- Keeping your anti-virus program updated.
- Obtaining all software from reputable sources and checking the software for viruses before installing it.

- Disabling macros on suspicious Microsoft Word and Excel files. These programs will warn you if a document that you are opening contains a macro that might have a virus.

To remove a virus:

1. Find and remove the virus immediately using your anti-virus program.
2. Turn off your server and leave it off for at least 30 seconds.
3. Turn on the server and rescan for the virus.
4. If the virus is still on your server, contact Gateway Technical Support.

System administration and control

Your server is equipped with server-management tools to enable administration and control of Windows NT environments. These tools are ManageX Event Manager, and the Gateway™ server management software.

ManageX Event Manager

ManageX lets the system administrator manage multiple systems on a Windows NT or Windows 2000 network from a single window, and implement commands and policies across the network with a single action. With this tool you can automate system management tasks, which can be triggered by specific events or at specified thresholds.

Additional information about the ManageX Event Manager can be found under **Documentation** on the Server Companion CD which came with your system.

Gateway® server management software

The Gateway® server management software provides continuous, in-band monitoring, alerting, and management of your server. Information is provided on such things as system temperature, system fans, voltage and power supply conditions, system memory, and chassis intrusion.

Additional information about the Gateway® server management software can be found under **Documentation** on the Server Companion CD which came with your system.

System security

To prevent unauthorized entry or use of the system, a key lock on the bezel door is provided. This lock not only prevents unauthorized access to the power switch, but prevents removal of the side cover as well.

Security measures may also be set in the BIOS Setup utility which establish passwords and automatic system lockouts. The system also includes server management software that monitors the chassis intrusion switch.

Mechanical lock and monitoring

The system includes an intrusion switch. When the bezel is removed, the switch transmits an alarm signal to the server, where server management software processes the signal.

Software locks through the BIOS Setup utility

The Security tab in the BIOS Setup utility (see "About the BIOS Setup utility" on page 85) provides several security features to prevent unauthorized access to the system. Once the security measures are enabled, access to the system is allowed only after you enter the correct password(s). For example, the security features let you:

- Set and enable supervisor and user passwords.
- Set user BIOS setup access level (full, limited, view only, or no access).
- Set Password Check for **setup only** or **always**.
- Enable Unattended Start mode which, when enabled, allows the host system to complete the boot process without a password, yet causes the keyboard and mouse to remain locked until the user password is enabled.

Using passwords

If you set and enable a user password but not a supervisor password, enter the user password to boot the system with unlimited BIOS Setup access.

If you set and enable both a user and a supervisor password:

- Enter either one to boot the server and enable the keyboard and mouse.
- Enter the supervisor password for full access the BIOS Setup to change the system configuration.

Changing passwords

To change or delete an existing user password, restart the system and press F1 to enter the BIOS Setup utility, then enter the password when the system asks for it during the POST routine. To change the password, select **Change User Password** from the **Security** menu, then enter and confirm the new password.

To change or delete an existing supervisor password, restart the system and press F1 to enter the BIOS Setup utility, then enter the supervisor password (not the user password) when the system asks for the password during the POST routine. To change the supervisor password, select **Change Supervisor Password** from the **Security** menu, then enter and confirm the new password.

To cancel the supervisor password, select **Change Supervisor Password** from the **Security** menu, enter the current supervisor password, then, when asked to confirm the new password, press ENTER without entering anything. The system will respond with the message "Password Uninstalled."

System recovery

We recommend that you take advanced precautions in case your hard drive is damaged or your BIOS or system files get corrupted. This will make it easier to restart your system and recover damaged files.

Creating a startup diskette

If your server hard drive is damaged, you may not be able to start the server from the hard drive. A startup diskette is a bootable diskette that lets you start the server and attempt to fix the problem.

When you set up Windows NT you are prompted to create a startup diskette. If you did not choose to create a startup diskette at that time, you may create one later by running the Windows NT upgrade/installation program.

To create a startup diskette:

1. Go to the DOS Command Prompt, and change to the **C:\I386** subdirectory.
2. Type **winnt32/ox**, then press ENTER and follow the prompts.

Using your Server Companion CD

The Server Companion CD included with your system can be used to:

- Install hardware drivers for a variety of operating systems
- Reinstall selected utilities
- Access system documentation

Instructions for each operating system are provided with the Server Companion CD.

Cleaning the Server

7

Cleaning the mouse

If the mouse pointer on the screen moves erratically when you move the mouse, the inside of the mouse may be dirty.

To clean the mouse:

1. Turn off the server, then disconnect the mouse cable from the mouse port.
2. Turn your mouse upside down and remove the roller ball cover.
3. Cup your hand under the mouse and turn your mouse right-side up. The roller ball should drop into your hand. If it does not, gently shake the mouse until the ball drops out of the socket.
4. Use adhesive tape to pick up any dust or lint on the surface of the ball.
5. Wipe away dirt or lint inside the ball socket with a lint-free cloth. You can also blow into the socket to remove dirt and lint. Use a cotton swab dipped in isopropyl alcohol to clean the rollers inside the socket.
6. Let surfaces dry completely.
7. Return the ball to the socket and replace the cover.

Cleaning the keyboard

You should clean the keyboard occasionally to free it of dust and lint particles trapped under the keys. The easiest way to do this is to blow trapped dirt from under the keys using an aerosol can of air with a narrow, straw-like extension.

If you spill liquid on the keyboard, turn off the server, then disconnect the keyboard. Turn the keyboard upside down to let the liquid drain. Let the keyboard dry for a few days before trying to use it again. If the keyboard does not work after it is dry, you may need a new one.

Cleaning the monitor screen

Use a soft cloth and window cleaner to clean the monitor screen. Squirt a little cleaner on the cloth (never directly on the screen), then wipe the screen with the cloth.

Cleaning the server and monitor cases

Caution



When you clean the system, turn off the server, monitor, and peripherals, then unplug the power cords and modem cord (if installed). Be careful not to drip liquid into the server, monitor, and peripherals when cleaning the system.

Always turn off the server and other peripherals before cleaning any components.

Use a damp, lint-free cloth to clean the server case, monitor case, keyboard, speakers, and other parts of the server. Avoid abrasive or solvent cleaners because they can damage the finish on your components.

Your server is cooled by air drawn in through the vents on the chassis and blown out through the power supply exhaust fan. Keep vents on the front and back of the chassis free of dust. With the server turned off and unplugged, brush the dust away from the vents with a slightly damp cloth. Be careful not to drip any water into the vents. Do not attempt to clean dust from the inside the server.

8 Troubleshooting

Introduction

If your system does not operate correctly, re-read the instructions for the procedures you have performed. If an error occurs within a program, consult the documentation supplied with the software. This section identifies solutions to some possible problems.

Troubleshooting checklist

Before turning on the system, make sure that:

- The power cord is connected to the AC power-in connector and an AC outlet.
- The AC outlet is supplying power.
- If a power strip is used, it is turned on, and the circuit breaker is set.
- The voltage selection switch on the system power supply reflects the proper voltage.

Verifying your configuration

If your system is not operating correctly, the BIOS may contain an invalid configuration parameter. Open the BIOS Setup utility and check your configuration settings. (See "About the BIOS Setup utility" on page 85.)

Troubleshooting guidelines

As you troubleshoot your system, keep the following guidelines in mind:

- Never remove the chassis cover while the server is turned on.
- Do not attempt to open the monitor. Even if the power is disconnected, stored energy in the monitor components can inflict a painful or harmful shock.
- If a peripheral does not work, make sure that all connections are secure.
- If you see an error message on the screen, write it down, word for word. You may be asked about it when calling Technical Support.
- Only qualified personnel should open the system for maintenance.

If you are qualified to maintain the system yourself, make sure you are properly grounded before opening the system chassis. See "Preventing static electricity discharge" on page 22 for more information on preventing electrostatic damage to the system.

CD drive problems

An audio CD produces no sound.

Probable cause	Solution
The CD is loaded incorrectly	Make sure the label is facing up, then try again.
The speakers are not connected	Make sure the speaker cables are connected properly and securely.
The speaker volume is turned down	Check the volume control and turn it up if necessary.
The speakers may be muted through the Multimedia volume control	Click the speaker icon on the task bar. Make sure the **Mute** check box is not selected.
The speakers may be faulty	Connect a set of headphones to the line out jack to test the output. If they work, replace the speakers.
The sound card may not be installed correctly	Open the system, then reseat the sound card. Make sure the cables are connected properly. Some systems do not have sound cards because sound capabilities are built into the system board.
The CD drive audio cable may be installed incorrectly	Open the system and make sure the cables are connected properly. Some systems do not have sound cards because sound capabilities are built into the system board.

The system does not recognize the CD drive.

Probable cause	Solution
The CD is not intended for PC use	Make sure the CD is PC compatible.
The CD is loaded incorrectly	Make sure the label is facing up, then try again.
The CD is scratched or dirty	Try cleaning the CD with a lint-free cloth. Make sure the CD is not scratched.
The CD drive needs to be added as new hardware	In the Control Panel window (**Start** \| **Settings** \| **Control Panel**), double-click **Add New Hardware**. Follow the on-screen instructions for adding the drive.
The secondary IDE device may be disabled	Restart your server, then press F1 to open the BIOS Setup utility. From the **Advanced \| IDE Configuration** menu, set the **IDE Controller** to **Both** and the **Secondary IDE Master** to **Auto**.
The CD cables are not installed correctly	Open the system and make sure all cables between the CD controller and the CD drive are connected correctly.
The CD drive may be defective	Replace the CD drive.

Diskette drive problems

The system does not recognize the diskette drive.

Probable cause	Solution
The diskette drive may be configured incorrectly	Restart your server, then press F1 to open the BIOS Setup utility. In the **Advanced \| Floppy Configuration** menu, make sure that the diskette drive parameters are set correctly.
The drive cables are not connected properly	Open the system and make sure all cables are correctly connected to the system board.

The diskette drive will not read, write, or format.

Probable cause	Solution
The diskette is not IBM formatted	Make sure the diskette you are trying to format is IBM compatible. If it is, try reformatting it. If it is not, get a compatible diskette.
The diskette is corrupted	Run Check Disk on the diskette. If errors are detected and corrected, try accessing the diskette again.
The diskette is write-protected	Make sure the write-protection window on the upper-right corner of the diskette is closed (unprotected).

The diskette drive LED illuminates continuously.

Probable cause	Solution
The diskette is corrupted	Remove the diskette from the drive. If the light remains on, try restarting the system.
The cable to the drive is not connected properly	Open the system and make sure the cable is connected properly between the diskette drive and its controller. Make sure the pins are not bent or misaligned.

Hard drive problems

The system does not recognize the SCSI drive.

Probable cause	Solution
The SCSI chain is not properly terminated	Make sure the last device on the SCSI chain is properly terminated.
The drive is configured with a conflicting SCSI address	Change the device's SCSI address to one that is not currently being used by the system.
The cables are not connected correctly	Open the system and make sure the cable connections are correct.

The system does not recognize the IDE drive.

Probable cause	Solution
The primary IDE device may be configured incorrectly	Restart your server, then press F1 to open the BIOS Setup utility. From the **Advanced \| IDE Configuration** menu, set the **IDE Controller** to **Both** and the **Primary IDE Master** to **Auto**.
The drive may not be configured properly	Consult the hard drive user's guide for instructions on how to configure the drive. Configure the drive correctly.
The drive cables are not connected properly	Open the system and make sure all cables to the controller card are connected correctly. Some systems do not have IDE controller cards because the IDE controller is built into the system board.
The drive controller is not seated properly	Open the system and reseat the drive controller. Some systems do not have IDE controller cards because the IDE controller is built into the system board.

Memory and processor problems

The system detected memory errors during start up.

Probable cause	Solution
Memory was added or removed, and the new configuration was not saved in BIOS Setup utility	Open the BIOS Setup utility and save the new memory configuration.
The memory was installed incorrectly	Make sure the memory is seated and oriented correctly.
A memory chip is faulty	Replace the card with the faulty chip. Third-party diagnostic programs can help determine which chip or memory segment is failing.

The system does not recognize a new or second processor.

Probable cause	Solution
The processor was installed incorrectly or was not seated correctly in the socket	Check the installation and make sure the processor is fully seated in the socket. The processor should be recognized automatically if it was installed correctly.

Modem problems

The system does not recognize the modem.

Probable cause	Solution
The modem has not been added as new hardware	Add the modem as new hardware.
The modem is not connected to a live telephone jack	Make sure the line connected to the modem is working and plugged into the appropriate port on the modem (line port).
The modem is not configured with a valid interrupt or address	Check the system settings for possible conflicts. If one exists, correct the problem by selecting an available interrupt and address.
The telephone jack is shared by another modem or telephone	If the modem shares the jack with another device, make sure the other device does not have the port open (for example, someone is on the telephone, or another modem is in use).

Peripheral/adapter problems

The system does not recognize a SCSI device.

Probable cause	Solution
The device needs to be added as new hardware	In the Control Panel window (**Start** \| **Settings** \| **Control Panel**), double-click **Add New Hardware**. Follow the on-screen instructions for adding the device.
The SCSI ID may be invalid	Assign an available SCSI ID to the device.
The SCSI chain is not properly terminated	Make sure the last device on the SCSI chain is terminated.
The device cables are not installed correctly	Open the system and check all cables between the controller and the device. Install the cables correctly if necessary.

The system does not recognize an adapter card.

Probable cause	Solution
The interrupt or I/O address is set incorrectly	Check the address configuration of the adapter card and make sure that it does not conflict with another card in the system.
The card was not configured through the software	Configure the card with the appropriate software.
The card was not installed correctly	Make sure that the jumpers are configured correctly, then reseat the card.

Printer problems

The printer will not turn on.

Probable cause	Solution
The printer is not connected to the system	Make sure the data cable is properly connected between the printer and the system. Check the connector and cable for bent or broken pins.
The printer is not plugged in	Make sure the power cable is plugged into a working power source.
The printer is not turned on	Make sure the printer's power switch is pressed or set to the On position. If power is applied to the printer, the green power LED should be illuminated.
The printer is defective	Try another printer, if one is available.

The printer is turned on but will not print.

Probable cause	Solution
The printer is not connected to the system	Make sure the data cable is properly connected between the printer and the system. Check the connector and cable for bent or broken pins.
The printer is not designated as the default printer	If the printer that you are trying to print to is not the default printer, make sure you have selected it through the program's printer setup function.
The printer has not been added to the system	In the Printers window (**Start \| Settings \| Printers**), double-click **Add Printer**. Follow the on-screen instructions for adding the new printer.
The printer is not on-line (ready)	Make sure the on-line or ready light is on, or the display indicates "Ready."

The printer prints garbled text.

Probable cause	Solution
The wrong driver is being used for the selected printer	In the Printers window (**Start \| Settings \| Printers**), select the printer. From the **File** menu, select **Properties**. Make sure the printer is using the correct printer driver. If not, install the correct one.

System problems

The system will not start up.

Probable cause	Solution
The system is not connected to an AC outlet	Make sure the power cable(s) are connected correctly to an operating AC power source.
The voltage selection switch is not set correctly	Make sure the voltage selection switch is set to the correct power source.

The system is non-responsive.

Probable cause	Solution
An error occurred while running a program or your system may be out of memory	Restart your server by pressing the reset button. If the system is still non-responsive, press and hold in the power button for 4 seconds to turn the system off. Turn the system back on and follow the on-screen instructions.
Heatsink is not seated	Reseat the heatsink.

The keyboard does not work.

Probable cause	Solution
Keyboard is locked out when password is set	Enter the password.
A key was pressed while the system was starting up	Clear the sticking key, then turn off the system, wait for a few seconds, then turn the system back on.
The keyboard is not plugged in or connected properly	Make sure the cable is plugged in correctly.
Something spilled into the keyboard	Turn off the system. Turn the keyboard upside down to drain, then turn it over and let it dry before using the keyboard again.
The keyboard is defective	Try a keyboard you know is working.

The mouse does not work.

Probable cause	Solution
Mouse is locked out when password is set	Enter the password.
The mouse is not plugged in or connected properly	Make sure the cable is plugged in correctly.
The mouse driver did not load when the system started	Load the appropriate mouse driver manually or contact Technical Support.
The mouse is defective	Try a mouse that you know is working.

Video problems

The system is running but the screen is blank.

Probable cause	Solution
The monitor is not turned on	Make sure the monitor is plugged in and turned on. If the monitor is turned on, the green power LED should illuminate.
The monitor data cable is not connected	Make sure the monitor data cable is connected to the video controller on the back of the system.
The connector or cable is damaged	Check the connector and cable for bent or damaged pins.
The monitor is defective	Connect a working monitor to the server.
The monitor brightness and contrast controls are turned down	Adjust the brightness and contrast knobs to the center position.
A DIMM is not seated properly - indicated by a beep	Open the system and reseat the DIMM.

The image on the screen is dim or difficult to read.

Probable cause	Solution
The monitor brightness and contrast controls are turned down	Adjust the brightness and contrast knobs until the text becomes clear.
Light is glaring off the display	Position the monitor away from the sun or other light source.
The monitor may be old	Replace the monitor.

The color monitor displays everything in black and white.

Probable cause	Solution
The system was turned on before the monitor	Make sure the monitor is turned on, then restart the system.

Probable cause	Solution		
The display type is set incorrectly	In the Control Panel window (**Start	Settings	Control Panel**), double-click **Display**, set the display to the appropriate monitor type, then restart the system.

The displayed characters are garbled.

Probable cause	Solution		
The video cable is damaged	Make sure the cable and connectors are in good condition (no bent pins or broken wires).		
The display setup is incorrect	In the Control Panel window (**Start	Settings	Control Panel**), double-click **Display** and check the settings. The correct video type should be selected, along with a supported resolution. Check your monitor and video controller documentation for details.

The video is distorted.

Probable cause	Solution
The monitor controls are not properly adjusted	Adjust the monitor controls until the text becomes clear. (See your monitor documentation for more information.)
The connector or cable is damaged	Make sure the cable and connectors are in good condition (no bent pins or broken wires).
The surge protector or UPS is damaged	Disconnect the monitor power cable and connect it directly to the power source.
The monitor is too close to a source of electrical interference	Move the monitor away from sources of electrical interference, such as televisions, unshielded speakers, microwave ovens, fluorescent lights, and metal beams or shelves.
The monitor needs to be degaussed	Turn off the server and monitor for at least a half hour, then restart the system.

Error messages

This section lists common error messages that you may see. These messages often indicate procedural errors such as an incorrect keystroke or a write-protected diskette. Some messages, however, may indicate a problem that requires you to consult the troubleshooting section of this manual.

Error message	Solutions
Access denied	Try saving to a new file or diskette. Move the write-protection tab over the hole on the back of the diskette.
Bad command or file name	Make sure you entered the right command. Make sure the specified drive is correct, then try again. If you are trying to exit MS-DOS to return to Windows, type **exit**, then press ENTER.
Base memory [xxx] expansion	This is an informational message only. No action is required.
Checking RAM on disk controller	Your BIOS configuration is incorrect. Open the BIOS Setup utility, then make sure the settings are correct.
CD drive is not recognized	See “The system does not recognize the CD drive.” on page 108 for a possible solution.
Data error	Use Check Disk on the drive with the error.
Decreasing available memory	Your BIOS configuration is incorrect. Open the BIOS Setup utility, then make sure the settings are correct.
Diskette drive is not recognized	See “The system does not recognize the diskette drive.” on page 109 for a possible solution.
Diskette drive 0 seek to track 0 failed	Open the BIOS Setup utility, then make sure the drive settings are correct. Check the diskette drive cables. Make sure Pin 1 on the cable aligns with Pin 1 on the connector.

Error message	Solutions
Diskette drive reset failed	Open the BIOS Setup utility, then make sure the drive settings are correct. Check the diskette drive cables. Make sure Pin 1 on the cable aligns with Pin 1 on the connector.
Diskette read failed - press F1 to retry boot	Make sure the boot disk contains the **Command.com** file. Use the BIOS Setup utility (if necessary) to make sure your drive or controller is configured correctly. Press F1 to restart the server.
Gate A20 failure	You may have an XT keyboard connected to an AT system or vice versa. Make sure the keyboard is configured to work with the appropriate system. Some keyboards have a switch to select either AT or XT.
Hard disk controller failure	Make sure the hard drive cable is properly connected. Open the BIOS Setup utility, then make sure that the correct drive type is selected.
Hard disk controller failure - press F1 to try reboot	The drive controller may be defective. Press F1 to try to restart the server. Try running Fdisk and DOS Format. For more information, refer to your operating system documentation.
Insert bootable media device	See “The system does not recognize the IDE drive.” on page 110 for a possible solution. See “The system does not recognize the SCSI drive.” on page 110 for a possible solution. Backup your files as soon as possible.
Insufficient disk space	Check the free space on the disk. If the disk is full or almost full, remove unnecessary files.
Invalid configuration information	Open the BIOS Setup utility, then make sure the settings are correct.

Error message	Solutions
Invalid password	Enter your password again, making sure to enter it correctly. Note that some passwords are case-sensitive. If you do not know the password, you may need to reinstall the software you are trying to access. Startup passwords are stored in BIOS. If this password has been set and is unknown, you may be able to reset the password through system board jumper settings.
Keyboard clock line failure	Try a working keyboard. Make sure the keyboard is compatible with the system. You may have to change the switch setting to AT.
Keyboard controller failure	Try a working keyboard. Make sure the keyboard is compatible with the system. You may have to change the switch setting to AT.
Keyboard not detected	See “The keyboard does not work.” on page 117 for a possible solution. Turn off the system, then check the keyboard cable.
Keyboard stuck key failure	Remove any objects that may be resting on the keyboard, then restart the system. Check for sticky keys. Clean the keyboard if necessary.
Memory errors were detected while the system powered up	See “The system detected memory errors during start up.” on page 111 for a possible solution.
Memory size error	Enter the BIOS Setup utility, then save the memory configuration.
Non-system disk or disk error	Eject the diskette, then press ENTER. If the diskette is bootable, check it for errors.
Not enough memory	Close all programs that are not currently in use.

Error message	Solutions
Print queue is full	Wait until the current print job has completed before sending another print job. If you receive this error often, you need to add memory to the printer.
Printer is out of paper	Add paper to the printer. Make sure the printer is online.
Required parameter missing	Make sure you entered the right command. If you are trying to exit MS-DOS to return to Windows, type **exit**, then press ENTER.
Syntax error	Make sure you entered the right command. If you are trying to exit MS-DOS to return to Windows, type **exit**, then press ENTER.
Time and date not set	Open the BIOS Setup utility, then set the system date and time.
Write-protect error	Move the write-protection tab over the hole on the back of the diskette.

Safety and Regulatory Information

A

Important safety information

Your Gateway system is designed and tested to meet the latest standards for safety of information technology equipment. However, to ensure safe use of this product, it is important that the safety instructions marked on the product and in the documentation are followed.

Warning



Always follow these instructions to help guard against personal injury and damage to your Gateway system.

Setting up your system

- Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.
- Do not use this product near water or a heat source such as a radiator.
- Set up the system on a stable work surface.
- The product should be operated only from the type of power source indicated on the rating label.
- If your computer has a voltage selector switch, make sure that the switch is in the proper position for your area. The voltage selector switch is set at the factory to the correct voltage.
- Openings in the computer case are provided for ventilation. Do not block or cover these openings. Make sure you provide adequate space, at least 6 inches (15 cm), around the system for ventilation when you set up your work area. Never insert objects of any kind into the computer ventilation openings.
- Some products are equipped with a three-wire power cord to make sure that the product is properly grounded when in use. The plug on this cord will fit only into a grounding-type outlet. This is a safety feature. If you are unable to insert the plug into an outlet, contact an electrician to install the appropriate outlet.
- If you use an extension cord with this system, make sure that the total ampere rating on the products plugged into the extension cord does not exceed the extension cord ampere rating.
- If your system is fitted with a TV Tuner, cable, or satellite receiver card, make sure that the antenna or cable system is electrically grounded to provide some protection against voltage surges and buildup of static charges.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill anything on the system. The best way to avoid spills is to avoid eating and drinking near your system.
- Some products have a replaceable CMOS battery on the system board. There is a danger of explosion if the CMOS battery is replaced incorrectly. Replace the battery with the same or equivalent type recommended by the manufacturer. Dispose of batteries according to the manufacturer's instructions.
- When the computer is turned off, a small amount of electrical current still flows through the computer. Always unplug all power cables and modem cables from the wall outlets before cleaning the system.
- Unplug the system from the wall outlet and refer servicing to qualified personnel if:
 - The power cord or plug is damaged.
 - Liquid has been spilled into the system.
 - The system does not operate properly when the operating instructions are followed.
 - The system was dropped or the cabinet is damaged.
 - The system performance changes.

Warning



To prevent electric shock, never remove the cover. There are no user serviceable parts inside. Refer servicing to qualified service personnel.

Replacement parts and accessories

Use only replacement parts and accessories recommended by Gateway.

Important



Do not use Gateway products in areas classified as hazardous locations. Such areas include patient care areas of medical and dental facilities, oxygen-laden environments, or industrial facilities.

Caution



To reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord.

Regulatory compliance statements

United States of America

Federal Communications Commission (FCC)
Unintentional emitter per FCC Part 15

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- Use only shielded cables to connect peripherals to the system.

Compliance Accessories: The accessories associated with this equipment are: shielded video cable when an external monitor is connected. These accessories are required to be used in order to ensure compliance with FCC rules.

Caution



Changes or modifications not expressly approved by Gateway could void the user's authority to operate the equipment.

FCC declaration of conformity

Responsible party:

Gateway Companies, Inc.
610 Gateway Drive, North Sioux City, SD 57049
(605) 232-2000Fax: (605) 232-2023

Product:

Gateway 7400 Server

This device complies with Part 15 of the FCC Rules. Operation of this product is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution



Changes or modifications not expressly approved by Gateway could void the FCC compliance and negate your authority to operate the product.

Telecommunications per FCC part 68 (applicable to products fitted with USA modems)

Your modem complies with Part 68 of the Federal Communications Commission (FCC) rules. On the computer or modem card is a label that contains the FCC registration number and Ringer Equivalence Number (REN) for this device. If requested, this information must be provided to the telephone company.

An FCC-compliant telephone line cord with a modular plug is required for use with this device. The modem is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant. See installation instructions for details.

The Ringer Equivalence Number (REN) is used to determine the number of devices which may be connected to the telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

If this device causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. The telephone company may request that you disconnect the equipment until the problem is resolved.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

This equipment cannot be used on telephone company-provided coin service. Connection to party line service is subject to state tariffs. Contact the state public utility commission or public service commission for information.

When programming or making test calls to emergency numbers:

- Remain on the line and briefly explain to the dispatcher the reason for the call.
- Perform such activities in the off-peak hours such as early morning or late evenings.

The United States Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains, in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, an identification of the business, other entity, or other individual sending the message, and the telephone number of the sending machine or such business, other entity, or individual. Refer to your fax communication software documentation for details on how to comply with the fax-branding requirement.

Canada

Industry Canada (IC)
Unintentional emitter per ICES-003

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par Industrie Canada.

Telecommunications per DOC notice
(for products fitted with an IC-compliant modem)

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation, and safety requirements. The Department does not guarantee the equipment will operate to the users' satisfaction.

Before installing this equipment, users should make sure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should make sure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Warning



To avoid electrical shock or equipment malfunction do not attempt to make electrical ground connections by yourself. Contact the appropriate inspection authority or an electrician, as appropriate.

The **Ringer Equivalence Number** (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

EPA ENERGY STAR



As an ENERGY STAR® Partner, Gateway has determined that this product meets the ENERGY STAR guidelines for energy efficiency when used with a computer equipped with a Display Power Management System.

System Specifications

B

The following specifications are for the standard configuration. The server may contain optional equipment. All specifications are subject to change.

Case size	8.6-in. (21.84 cm) x 28.8-in. (73.15 cm) x 17.4-in. (44.2 cm) (W x D x H) Note: with outriggers and castors, system is 20-in. (50.8 cm) high
Processors	As many as two Pentium III™ (FC-PGA Socket 370) processors operating at 667 MHz and faster with 133 MHz Front Side Bus.
RAM	Four DIMM sockets support up to 2.0 GB of PC/133 SDRAM
BIOS	Flash BIOS for easy updates from diskette
IDE interfaces	Supports as many as four ATAPI/IDE devices (hard drives, CD drives, LS-120 drives) using two onboard PCI IDE adapters
Diskette drive interface	Diskette controller is integrated on the system board
I/O ports	One parallel port, two serial ports, two USB ports, one PS/2 keyboard port, one PS/2 mouse port, video port, and RJ-45 LAN port. LPT and COM ports configurable from system setup program. No jumper settings required.
SCSI interfaces	Integrated dual-channel U160 LSI 53C1010 SCSI controller
Network interface	Intel 82559 PCI ethernet controller
Video	Integrated ATI Rage-XL PCI-based VGA controller with 4 MB of PC100 SDRAM.
Expansion slots	Seven PCI slots (two 64-bit, 33 MHz and five 32-bit, 33 MHz)
Power supply	350 W redundant power supply
Certification	FCC Class A, UL, CUL, CD Mark, VCCI, CB Scheme

Environmental specifications

The following specifications identify maximum environmental conditions. At no time should the server run under conditions which violate these specifications.

Variable	Requirements
Temperature	Maximum rate of change = 10° C per hour
Nonoperating	-48.3° to 65.5° C (-55° to 150° F)
Operating	5° to 35° C (41° to 95° F); derated 0.5° C for every 1000 ft. (305 m)
Altitude	10,000 ft. max
Humidity	
Nonoperating	95% relative (noncondensing) at 30° C (86° F)
Operating wet bulb	Not to exceed 33 °C (91.4° F) (with diskette drive or hard drive)
Shock	
Operating	2.0 g, 11 msec, 1/2 sine
Packaged	Operational after 30-inch free fall (cosmetic damage might occur)
AC Input Power	
100-120 V~	100-120 V~, 6 A, 50/60 Hz
200-240 V~	200-240 V~, 3 A, 50/60 Hz

System I/O addresses

The following table shows the location in I/O space of all directly I/O-accessible registers.

Address	Resource
0000h - 000Fh	DMA Controller 1
0010h - 001Fh	DMA Controller 1
0020h - 0021h	Interrupt Controller 1
0022h - 0023h	
0024h - 0025h	Interrupt Controller 1
0026h - 0027h	
0028h - 0029h	Interrupt Controller 1
002Ah - 002Bh	
002Ch - 002Dh	Interrupt Controller 1
002Eh - 002Fh	Super I/O Index and Data Ports
0030h - 0031h	Interrupt Controller 1
0032h - 0033h	
0034h - 0035h	Interrupt Controller 1
0036h - 0037h	
0038h - 0039h	Interrupt Controller 1
003Ah - 003Bh	
003Ch - 003Dh	Interrupt Controller 1
003Eh - 003Fh	
0040h - 0043h	Programmable Timers
0044h - 004Fh	
0050h - 0053h	Programmable Timers
0054h - 005Fh	
0060h, 0064h	Keyboard Controller
0061h	NMI Status and Control Register
0063h	NMI Status and Control Register
0065h	NMI Status and Control Register
0067h	NMI Status and Control Register

Address	Resource
0070h	NMI Mask (bit 7) and RTC Address (bits 6::0)
0072h	NMI Mask (bit 7) and RTC Address (bits 6::0)
0074h	NMI Mask (bit 7) and RTC Address (bits 6::0)
0076h	NMI Mask (bit 7) and RTC Address (bits 6::0)
0071h	RTC Data
0073h	RTC Data
0075h	RTC Data
0077h	RTC Data
0080h - 008Fh	DMA Low Page Register
0090h - 0091h	DMA Low Page Register
0092h	System Control Port A (PC-AT control Port)
0093h - 009Fh	DMA Low Page Register
0094h	Video Display Controller
00A0h - 00A1h	Interrupt Controller 2
00A4h - 00A15	Interrupt Controller 2
00A8h - 00A19	Interrupt Controller 2
00Ach - 00Adh	Interrupt Controller 2
00B0h - 00B1h	Interrupt Controller 2
00B2h	Advanced Power Management Control
00B3h	Advanced Power Management Status
00B4h - 00B5h	Interrupt Controller 2
00B8h - 00B9h	Interrupt Controller 2
00BCh - 00BDh	Interrupt Controller 2
00C0h - 00DFh	DMA Controller 2
00F0h	Clear NPX error
00F8h - 00FFh	x87 Numeric Coprocessor
0102h	Video Display Controller
0170h - 0177h	Secondary Fixed Disk Controller (IDE)
01F0h - 01F7h	Primary Fixed Disk Controller (IDE)
0200h - 0207h	Game I/O Port
0220h - 022Fh	Serial Port A

Address	Resource
0238h - 023Fh	Serial Port B
0278h - 027Fh	Parallel Port 3
02E8h - 02Efh	Serial Port B
02F8h - 02FFh	Serial Port B
0338h - 033Fh	Serial Port B
0370h - 0375h	Secondary Diskette
0376h	Secondary IDE
0377h	Secondary IDE/Diskette
0378h - 037Fh	Parallel Port 2
03B4h - 03Bah	Monochrome Display Port
03BCh - 03BFh	Parallel Port 1 (Primary)
03C0h - 03CFh	Video Display Controller
03D4h - 03DAh	Color Graphics Controller
03E8h - 03EFh	Serial Port A
03F0h - 03F5h	Diskette Controller
03F6h - 03F7h	Primary IDE - Sec. Diskette
03F8h - 03FFh	Serial Port A (Primary)
0400h - 043Fh	DMA Controller 1, Extended Mode Registers
04D0h - 04D1h	Interrupt Controllers 1 and 2 Control Register
0678h - 067Ah	Parallel Port (ECP)
0778h - 077Ah	Parallel Port (ECP)
07BCh - 07BEh	Parallel Port (ECP)
0CA0 - CA3h	BMC Registers
0CF8h	PCI CONFIG_ADDRESS Register
0CF9h	NBX Turbo and Reset control
0CFCh	PCI CONFIG_DATA Register
46E8h	Video Display Controller

Memory map

Address Range (hex)	Amount	Function
0 to 07FFFFh	640 KB	DOS region, base system memory
0A0000h to 0BFFFFh	128 KB	Video or SMM memory
0C0000h and 0DFFFFh	128 KB	Expansion card BIOS and buffer area
0E0000h to 0FFFFFh	128 KB	System BIOS
0E0000h to 0EFFFFh	2 MB	Extended system BIOS
FC000000h to FFFFFFFFh	64 MB	PCI memory space

Interrupts

The following table suggests a logical interrupt mapping of interrupt sources. It reflects a typical configuration, but you can change these interrupts. Use the information to determine how to program each interrupt. The actual interrupt map is defined using configuration registers in the I/O controller. I/O Redirection Registers in the I/O APIC are provided for each interrupt signal. The signals define hardware interrupt signal characteristics for APIC messages sent to local APIC(s).

Important



If you disable either IDE controller to free the interrupt for that controller, you must physically unplug the IDE cable from the system board. Simply disabling the drive by configuring the SSU option does not make the interrupt available.

Interrupt	I/O APIC Level	Description
INTR	INT0	Processor interrupt
NMI	N/A	NMI from PIC to processor
IRQ1	INT1	Keyboard interrupt
Cascade	INT2	Interrupt signal from second 8259
IRQ3	INT3	Serial port A or B interrupt from SIO device (you can configure either)
IRQ4	INT4	Serial port A or B interrupt from SIO device (you can configure either)

Interrupt	I/O APIC Level	Description
IRQ5	INT5	Parallel port II
IRQ6	INT6	Diskette port
IRQ7	INT7	Parallel port
IRQ8_L	INT8	RTC interrupt
IRQ9	INT9	Signal control interrupt (SCI) used by ACPI-compliant operating system
IRQ10	INT10	
IRQ11	INT11	
IRQ12	INT12	Mouse interrupt
IRQ13	INT13	Co-processor interrupt
IRQ14	INT14	Compatibility IDE interrupt from primary channel IDE devices 0 and 1
IRQ15	INT15	
SMI_L		System management interrupt - general purpose indicator sourced through the PID to the processors

DMA usage

The following table lists the direct memory access (DMA) channels that the system typically uses and which ones are available for use by add-in devices.

DMA	Resource
0	Cascade
1	Available
2	Floppy Controller
3	Available
4	Redirect Cascade
5	Available
6	Available
7	Available

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